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President's Report

For the year ending
30th June, 1922

1921/1922

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PRESIDENT'S REPORT

1921-22.

To the Governors of the University of Toronto:

GENTLEMEN:—

I beg to submit the following report on the academic work of the University and University College during the twelve months ended June 30th, 1922.

The total staff of the University and University College numbered 567, of whom 69 were professors, 53 associate-professors, 44 assistant-professors, 64 lecturers and associates (in medicine) and instructors in the College of Education, 337 demonstrators, fellows and instructors with sessional appointments. They were distributed as follows:—

	Professors.	Associate Professors.	Assistant Professors.	Associates.	Lecturers.	Other Sessional Appointments.	Director.	Director Field Work.	Assistant Instructors.
University (Faculty of Arts) .	24	14	17	.	21	71	.	.	.
University College	13	7	7	.	6	7	.	.	.
Faculty of Medicine	17	17	7	10	*9	155	.	.	.
Faculty of Applied Science....	10	11	6	.	x11	**47	.	.	.
Faculty of Household Science.	.	2	.	.	3	6	.	.	.
Faculty of Forestry	1	2	.	.	.	.	.	.	.
Faculty of Music	.	.	.	.	4	.	.	.	.
Social Service Courses	1	.	.	.	.	13	.	1	.
Public Health Nursing	.	.	.	.	.	22	1	1	.
Ontario College of Education ..	3	.	7	.	4	.	.	.	14

*One also in University; 2 also in Ontario College of Education.
xOne also in University.
**One also in Medicine.

In Victoria College there were:

Professors	14
Associate Professors	4
Lecturers	6
Special Instructor	1

In Trinity College there were:

Professors	8
Lecturers	11

In St. Michael's College there were:

Professors	12
Lecturers	8

The following professors retired from active service at the end of the session:

Dr. A. P. Coleman, F.R.S., Dean of the Faculty of Arts and Professor of Geology; Dr. D. J. Gibb Wishart, Professor of Oto-Laryngology; Mr. D. R. Keys, Professor of Anglo-Saxon; Dr. J. A. Craig, Professor of Oriental Languages and Dr. A. J. Bell, Professor of Comparative Philology.

Dr. Coleman is one of the best known geologists on this Continent and, after long and distinguished services as professor of Geology and for three years as Dean of the Faculty of Arts, he takes with him into his retirement the affection of the staff of the University.

Dr. Wishart devoted himself very effectively for many years to the development of his department, and filled an important place in the administration of the Faculty of Medicine, in which he will be remembered with high appreciation.

Professor Keys is one of the best known figures of the university staff. His kindliness won for him universal regard, and the unusual breadth of his acquaintance with languages and the variety of his interests gave him a unique position in University College.

The scholarship of Professor Bell made him an ornament of the University. Though the major part of his work was done in Victoria College, where he was professor of Latin, he filled the chair of Comparative Philology in the University with much distinction for many years.

I regret to announce the death of Professor George A. Bingham, which took place in March, 1922. He was one of the best surgeons on the staff and no one was held in greater affection by his colleagues and students in the Faculty of Medicine.

Professor J. J. Mackenzie and Professor H. J. Crawford died, one on August 2nd and the other on August 3rd, 1922. It is therefore appropriate that I should refer to them in this report. Both endured long illness and Professor Crawford suffered much. Professor Mackenzie held the chair of Pathology and Bacteriology for twenty-two years. His high scientific attainment, great devotion to his students and fine character gave him a large place in the University. He is deeply mourned. The chief duties of Professor Crawford were attached to his position as Headmaster of the University Schools, of which he was the first occupant. He had an excellent record as a student in the University, was an unusually effective teacher, and won the warm esteem of his colleagues and of the boys of the school.

Leave of absence was granted to the following on account of ill health: J. J. Mackenzie, B.A., M.B., Professor of Pathology and Bacteriology; T. R. Rosebrugh, M.A., Professor of Electrical Engineering; H. J. Crawford, B.A., Professor of Classics, Ontario College of Education.

The following new appointments and promotions were made during the year:

In the Faculty of Arts—Appointments:—Charles Ryle Fay, M.A., Cantab., D.Sc., London, professor of History of Economics; James Winfred Bridges, B.A., McGill, A.M., Ph.D., Harvard, assistant-professor of Psychology; John Gordon Andison, B.A., Man., A.M., Columbia, lecturer in French; Miss Katherine May Banham, B.Sc., Manchester, lecturer in Psychology; Winthrop Bell, M.A., Harvard, lecturer in Philosophy; J. Bartlet Brebner, B.A., Oxon., lecturer in History; Miss Gladys Ingleson Wookey, M.A., lecturer in English; Humphrey Hume Wrong, B.A., Oxon., lecturer in History; and Joseph Pijoan, special lecturer in Italian and Spanish.

Promotions:—Robert Morrison MacIver, B.A., Oxon., M.A., D.Phil., Edin., from an associate-professorship to a professorship in Political Economy; Charles Norris Cochrane, B.A., Oxon., from an assistant-professorship to an associate-

professorship in Ancient History; William Jackman, M.A., from an assistant-professorship to an associate-professorship in Political Economy; Gilbert Edward Jackson, B.A., Cantab., from an assistant-professorship to an associate-professorship in Political Economy; Francois Charles Archile Jeanneret, B.A. from an assistant-professorship to an associate-professorship in French; Marcel Moraud, L. ès L., Agrégé de l'Université, Paris, from an assistant-professorship to an associate-professorship in French; John Satterly, M.A., Cantab., D.Sc., London, from an assistant-professorship to an associate-professorship in Physics; William Stanley Funnell, M.A., from a lectureship to an assistant-professorship in Chemistry; Herbert Sutherland McKellar, B.A., from a lectureship to an assistant-professorship in French; Ellis Thomson, B.A.Sc., from a lectureship to an assistant-professorship in Mineralogy.

In the Faculty of Medicine—Appointments:—James Bertram Collip, Ph.D., assistant-professor of Pathological Chemistry; Frederick Grant Banting, M.B., special lecturer in Pharmacology; Samuel Johnson, M.A., M.D., C.M., lecturer in Anæsthesia; William Magner, M.D., D.P.H., lecturer in Pathology and Bacteriology; William Lipsett Robinson, B.A., McMaster, M.B., lecturer in Surgical Pathology and Curator of the Pathological Museum.

Promotions:—Herbert Alexander Bruce, M.D., from an associate-professorship to a professorship in Clinical Surgery; Clarence Leslie Starr, M.B., M.D., Bellevue, N.Y., from an associate-professorship to a professorship in Surgery; Donald Thomas Fraser, B.A., M.B., D.P.H., from a lectureship to an assistant-professorship in Hygiene and Preventive Medicine.

In the Faculty of Applied Science—Appointments:—Edgar Alfred Allcut, M.Sc., Birmingham, associate-professor of Thermodynamics; Owen William Ellis, M.Sc., lecturer in Metallurgy; Claude Delmont Locke, B.S., M.A., lecturer in Chemical Engineering; Ross Taylor, B.A.Sc., lecturer in Hydraulics.

Promotions:—Albert Thomas Laing, B.A.Sc., from an assistant-professorship to an associate-professorship of Highways; James Thomas King, B.A.Sc., from a lectureship to an assistant-professorship in Mining Engineering; William James Smither, B.A.Sc., from a lectureship to an assistant-professorship in Drawing; Albert Russell Zimmer, B.A.Sc., from a lectureship to an assistant-professorship in Electrical Engineering.

In the Faculty of Household Science—Appointments:—Miss Blanche Ronne Harris, B.Sc., M.A., Columbia, lecturer; Mrs. F. J. Nethercott, B. A., lecturer.

In the Ontario College of Education—Appointments:—John Fair Van Every, B.A., instructor in University Schools.

Health Service—Appointments:—Miss Edith Gordon, B.A., M.B., D.P.H., Medical Adviser for Women Students; George D. Porter, M.B., Special Lecturer on Health Education and Medical Adviser for Men Students.

The total number of students registered in the University in 1921-1922 was 5,349, or, apart from occasionals in Social Service, 5,100, distributed as follows:—

				Men.	Women.	Total.
Faculty of Arts				1,342	1,112	2,454
University of Toronto	190	124	314			
University College	672	579	1,251			
Victoria College	296	246	342			
Trinity College	75	61	136			
St. Michael's College	124	109	233			
Registered twice	15	7	22			
Graduate courses				141	57	198
Faculty of Medicine				997	75	1,072
Faculty of Applied Science				820	1	821

Ontario College of Education	213	140	353
Faculty of Forestry	62	..	62
Faculty of Music	24	20	44
Department of Social Service	17	293	310
Department of Public Health Nursing	..	77	77
Registered twice	37	5	42
	3,579	1,770	5,349

The figures may be further analyzed as follows:—

FACULTY OF ARTS.

University of Toronto.

	Men.	Women.	Total.
Teachers' Courses and Summer Session	85	112	197
Occasional Arts students	17	12	29
Veterinary students	88	..	88
	190	124	314

University College.

	Men.	Women.	Total.
First year undergraduates	281	224	505
Second year undergraduates	134	133	267
Third year undergraduates	132	107	239
Fourth year undergraduates	83	85	168
Occasional students	42	33	75
Registered twice	..	3	3
	672	579	1,251

Victoria College.

	Men.	Women.	Total.
First year undergraduates	101	86	187
Second year undergraduates	62	63	125
Third year undergraduates	64	59	123
Fourth year undergraduates	39	31	70
Occasional students	30	7	37
	296	246	542

Trinity College.

	Men.	Women.	Total.
First year undergraduates	23	25	48
Second year undergraduates	19	12	31
Third year undergraduates	20	11	31
Fourth year undergraduates	10	8	18
Occasional students	3	5	8
	75	61	136

St. Michael's College.

	Men.	Women.	Total.
First year undergraduates	49	52	101
Second year undergraduates	25	21	46
Third year undergraduates	21	18	39
Fourth year undergraduates	15	18	33
Occasional students	14	..	14
	124	109	233

Graduate Courses.

	Men.	Women.	Total.
Candidates for Ph.D.	47	10	57
Candidates for M.A.	77	37	114
Candidates for M.D.	7	..	7
Graduate students	10	10	20
	141	57	198

FACULTY OF MEDICINE.

	Men.	Women.	Total.
First year undergraduates	128	9	137
Second year undergraduates	181	8	189
Third year undergraduates (Six years' course)	130	15	145
Third year undergraduates (Five years' course)	194	15	209
Fourth year undergraduates	207	13	220
Fifth year undergraduates	143	14	157
Post graduate students	6	..	6
Occasional students	2	..	2
Candidates for D.P.H.	6	1	7
	997	75	1,072

FACULTY OF APPLIED SCIENCE AND ENGINEERING.

	Men.	Women.	Total.
First year undergraduates	174	..	174
Second year undergraduates	193	..	193
Third year undergraduates	289	1	290
Fourth year undergraduates	154	..	154
Graduate students	10	..	10
	820	1	821

ONTARIO COLLEGE OF EDUCATION.

	Men.	Women.	Total.
Students registered	213	140	353

FACULTY OF FORESTRY.

	Men.	Women.	Total.
First year undergraduates	21	..	21
Second year undergraduates	13	..	13
Third year undergraduates	11	..	11
Fourth year undergraduates	13	..	13
Occasional and special students	4	..	4
	62	..	62

FACULTY OF MUSIC.

	Men.	Women.	Total.
First year undergraduates	9	10	19
Second year undergraduates	6	3	9
Third year undergraduates	1	1	2
Occasional students	8	6	14
	24	20	44

DEPARTMENT OF SOCIAL SERVICE.

	Men.	Women.	Total.
First year full-time students	8	44	52
Second year full-time students	1	8	9
Part-time students	8	241	249
	17	293	310

DEPARTMENT OF PUBLIC HEALTH NURSING.

	Men.	Women.	Total.
Full-time students	..	44	44
Part-time students	..	33	33
	..	77	77

The numbers examined in the different departments of the University, including those persons granted standing for Military Service, were as follows:—

Arts:		
Fourth year	393	
Third year	557	
Second year	789	
First year	1,272	
		3,011

Graduate courses		95
Medicine:		
Fifth year		154
Fourth year		214
Third year (Five years' course)		203
Third year (Six years' course)		129
Second year		166
First year		129
D.P.H.		7
Occasional student		1
		1,003
Applied Science and Engineering:		
Professional degrees		8
M.A.Sc.		10
Fourth year		154
Third year		285
Second year		190
First year		171
		818
Education		255
Forestry		59
Music		25
Law		26
Pharmacy		94
Dentistry		910
Agriculture		116
Local examinations in music		9,441
Veterinary Science		18
Social Service		216
Public Health Nursing		43
The degrees conferred were:		
LL.D. (Honorary)		14
D.Litt. (Honorary)		1
D.Sc. (Honorary)		5
M.D. (Honorary)		1
Mus.Doc. (Honorary		1
D.V.Sc. (Honorary)		1
Ph.D.		7
M.A.		56
M.A.Sc.		10
D.V.Sc.		1
LL.B.		6
M.D.		6
D.P.H.		9
M.B.		138
B.Sc.(Med.)		1
B.A.		361
C.E.		7
M.E.		1
B.A.Sc.		137
D.Pæd.		3
B.Pæd.		5
D.D.S.		174
B.S.A.		117
B.Sc.F.		11
Mus.Bac.		3
Phm.B.		92
B.V.Sc.		18
		1,166

The attendance during the academic year 1921-22 reached 5,349. In Arts the numbers were 2,454, of whom 1,251 were in University College. The ratio of men to women is increasing as compared with the war period, but the indications are that the relative number of women will remain permanently

larger, as more women are seeking higher education. The Colleges were faced with difficulties which were partly due to the fact that a low pass in junior matriculation is an insufficient preparation for the standards set in the first year of the academic course, and the large percentage of students who for several years have failed to make their standing in the first year shows that too many have been entering who should have remained longer at school or should have worked harder while in school. After long and careful consideration the Universities of the Province, at their annual conference in December, 1921, decided that in September, 1922, the entrance requirements should be complete junior matriculation, and in 1923, the same with either 75% in four papers or 66% in six pass papers, or 50% in two subjects of honour matriculation, or successful completion of a course at an Ontario Normal School. Such a standard should be no barrier to a boy or girl who has the will to work or the ability to succeed after coming to the University. It does not differentiate in favour of the city youth, but may perhaps prove to be an obstacle to those who turn to the University chiefly for its social life. Also the effort has been made to eliminate those students who have shown, after a year at the University, that they are unlikely to profit by continuing their course. Such a regulation requires delicate application, for in individual cases hardship might result were it rigidly enforced, but in principle and on the average it is for the advantage both of the youth and the College that those likely not to succeed should be told so as early in their course as possible.

I have been frequently assured by leading teachers in the American Universities, which to-day are thronged by vast numbers of students, that this attendance has become for them a menace to their instruction and the quality of their work. Many would like to adopt some such method as we have in matriculation in order to sift those who are fitted to proceed, and others speak approvingly of our honour system whereby we are able to select and give special attention to those who are qualified to do advanced work. Both our matriculation and our honour system, which are historic with us and characteristic of Canadian Universities, have great advantages which should not be lightly abandoned, though one problem in this Province is how we can modify our examination system, and at the same time retain its advantages. To have three weeks in May spent on examinations seems to be too long a portion of the academic year, but the complexity of our honour courses in Arts makes this necessary at present.

The attendance in Medicine remains at about the highest figure in our history. In fact, the final years are so large that both teachers and students complain that proper clinical instruction is not being given. The Hospitals cannot make enough clinical material available to allow of adequate instruction being given to more than about 100 students in each of the last three years. It was for this reason that the Faculty decided that not more than 125 should enter regularly in the first year. But last year 140 were received; those who were rejected included all applicants from outside Ontario and those of eighteen years and under who had only junior matriculation. For the year 1922-23 the standard of entrance acted upon has been several subjects in senior matriculation in addition to junior matriculation. Were it not for the excellent organization of clinical instruction under Professors Graham, Starr and Watson, to mention only the three larger departments, it would have been impossible to cope with the final years. When the attendance becomes normal again it will, I believe, be discovered that the Faculty of Medicine has carried through successfully a very

difficult piece of work. My attention was recently drawn to an article in the *British Medical Journal* which discussed very favourably our new course in medicine.

The report from the Dean of the Faculty of Applied Science draws attention to the fact that the higher requirements for entrance into that Faculty, which have been now in effect for some years, have reduced the number of students in the first year, but at the same time have brought to the University a quality of student who shows much better grasp of his work. I wish to draw attention to the changes as set forth in the Dean's report which have been introduced into the various departments, especially for the degree in Civil Engineering. These changes are the result of an attempt to meet prevailing conditions in the world of engineering and industry. This Faculty is affected more than any other by the developments which of late have been rapidly taking place. It is becoming increasingly common for men in business to have their sons take a university course, preferably in Applied Science, though they may intend to enter business life rather than to pursue a career in engineering. Architecture also has of recent years assumed a much more important place in the life of the community, and to differentiate it in some measure from engineering, the Senate, on the recommendation of the Faculty of Applied Science, has created the degrees of Bachelor and Master of Architecture.

The attendance in the Faculty of Forestry has reached the highest figure in its history, and every year is bringing fresh evidence of the large sphere of influence that the graduates of this Faculty will exercise in the preservation and development of the lumbering and forest-products industries of this Dominion. A new building for this Faculty, with which the Department of Botany has been associated, is long overdue, but I hope that in the coming year it may be possible to begin the erection of at least a portion of it.

The numbers in the College of Education are of course much reduced since students training for the higher Public School certificate have been removed to the Normal Schools, but those who are now in attendance in the College of Education are practically all graduates in Arts, and a better average grade of work has been made possible. The long illness of Professor H. J. Crawford, Headmaster of the Schools, was a serious handicap during the session, but his colleagues on the staff generously did their best to overtake the work which would have fallen to him. The addition of the building which has been provided for, and on which work has already begun, will be of great advantage to the University Schools as well as to the College of Education.

Toward the end of the academic year the Senate provided for a School of Graduate Studies which is to be controlled by a special council and a dean. The creation of this School gives a fuller recognition to the place that graduate work should hold within the University. It also brings together in a common council from all departments in the different faculties those who are engaged in graduate work, and thereby a similar status will be maintained for this kind of work throughout the University. In a certain sense the creation of this School is no new departure, as the Board of Graduate Studies has for years been in existence and a large amount of graduate work has been carried on. The report of the Dean shows how actively members of the staff have been engaged with graduates and what excellent results have already been attained. The establishment of the School, however, should imply that a new impulse will have been given to this essential

function of the University. In connection with this I wish to call attention to the report on Special Research in which it is shown that a large and varied amount of research work is being conducted in the University, but the most striking result of research during the past year has been the discovery of a method of making an extract from the pancreas, to be used for the treatment of diabetes, especially in its advanced stages. This remarkable and now widely known discovery has been due to the persistent and imaginative efforts of Dr. Banting, together with Mr. Best and Dr. Collip, aided by others, chiefly in the Physiological Laboratory, in which Dr. Macleod put his wide knowledge and experience at their disposal. This result is a splendid proof of what may be effected by research in a well-equipped laboratory where competent workers trained in scientific methods co-operate. It is such a discovery as this that justifies the expenditure of money which may, over a long period of time, seem to produce no obvious results until, based upon the quiet work that has been done in various departments, an investigator arrives at some conclusion which may be of untold value.

With the co-operation of the Toronto General Hospital the Department of Clinical Medicine has established a diabetic clinic and already patients have come from great distances. This is the opening of a new field for medical research and treatment. So far the clinical effects of insulin have been only partly investigated, and the best results will not be attainable until it is possible to have it manufactured in large quantities and of a standardized quality. In the Connaught Laboratories the great difficulties in the separation of insulin are being overcome. A large amount of money has already been spent by the Laboratories on this work, and the methods of production are developing rapidly. Important though the results have already been, a beginning only has been made. This discovery has given an immense impetus to the spirit of research throughout the University.

The year has brought wide expansion in the Department of Extension Work. Short courses for journalists and town-planners were instituted, a second short course for farmers was conducted, and a short course in Household Science; classes for teachers and others have been conducted in the cities of Toronto, Hamilton and Ottawa, and courses and lectures were also maintained in rural districts. A full account of this work is given in the report of the Director. This rapid development is a proof that here, as in the leading Universities of Britain and America, recognition has been made of the duty to support not only adult education but to give partial academic privileges to those who are unable to secure them intramurally.

Mr. Dale's report on Social Service is another proof of the successful efforts the University has made to give direction to those who are convinced that the urban and rural conditions need classes of people with university outlook to direct philanthropic activities and to prevent or alleviate the ills of society. In this connection I call attention also to the report of Miss Russell on the work of the second year in the course on Public Health Nursing, the cost of which is met by the Red Cross Society of Ontario.

The report of the Warden of Hart House is of especial interest, as it is the first made by the new warden, Mr. J. B. Bickersteth. He has brought great enthusiasm to his work, and has keen interest in the student himself. Knowing thoroughly the English system of college life at its best, and having had several years' experience in the University of Alberta, he has unusual qualifications. Already Hart House has attracted attention far beyond Canada as filling a noble function in student life.

I am glad to report that the property of the late Colonel Nichols, at 79 St. George Street, has been purchased, and that a dining hall, to hold about two hundred, together with a large room above for common collegiate purposes, is being erected. This building is to be devoted to the use of the women students of University College to serve as their Union and provide for them a meeting place in which their common college life can be developed.

I regret, however, that the accommodation for providing physical exercise and training for the women of the University is still insufficient. The appointment of Dr. Edith Gordon as medical adviser for the women students has emphasised more than ever the need for a large gymnasium, swimming-pool, and more outside ground for the women undergraduates of the University. Dr. Gordon's examination of the women students has shown that their health is on the whole very good, but undoubtedly the appointment of such a medical adviser will result in the saving of many a student from trouble in the future by directing her attention to incipient ills. No treatment is given by the medical adviser, but attention is drawn to weaknesses, and where medical or surgical treatment seems advisable the student is urged to have it at once. Before long a suitable infirmary should be provided for women students. At present the old converted houses that are being used for residences for the women of University College especially, while to be preferred to the rooming houses in which so many students still have to live, are poor substitutes for a well-built modern residence with good ventilation.

As announced in my last report, the Connaught Laboratories Committee has undertaken the support for two years of a medical service for men in order that results may be obtained as to the health conditions of a well-defined and comparatively homogeneous section of the community. The first annual report of Dr. George D. Porter, medical adviser for men students, deserves careful reading. Aided by a number of medical assistants, he has made a thorough examination of the physical condition of the men students of the first and second years. He has found that only three and one half per cent. of the total number of men in attendance during the first two years are unable to take physical exercise, and he states that the general health and well-being of the student community are remarkably good.

A special convocation was held on November 28th, when the honorary degree of Doctor of Laws was conferred upon His Excellency Lord Byng of Vimy.

Ten organ recitals were given by the University Organist, Dr. F. A. Mouré, fortnightly during the months from November to March.

The following special lectures were given: In October the Right Honourable Sir Robert L. Borden, G.C.M.G., P.C., LL.D., delivered three lectures on the Marfleet Foundation, entitled "An Introduction to the Study of Constitutional Development in Canada." In January Professor William Bateson, F.R.S., Director of the John Innes Horticultural Institution in England, gave a course of five lectures on the subject of "Genetics and Heredity." Sir Bertram Windle, F.R.S., gave a course of twelve lectures beginning in January on "Mediæval England from the Departure of the Roman Legions to the Tudor Period." In January also a conference was arranged by the Department of Philosophy, at which discussions were conducted by Professor Hocking of Harvard University on "Philosophy and History," by Professor P. D. Shastri of Calcutta University on "The Spirit of Eastern Philosophy," by Professor J. E. Creighton of Cornell University on "Philosophy in the Eighteenth and Nineteenth Centuries," and by Professor Woodbridge of Columbia University on "Modern Philosophy."

The following benefactions have been received during the year: Rockefeller Foundation $52,557.71; Eaton Endowment $25,000; John Hoskin Bequest $14,000; Carnegie Corporation for research in Physics $13,200; Canadian Red Cross for Public Health Nursing Department $5,075.15; Marion E. Dickenson Scholarship Fundation (Household Science) $4,000; Graduate Fellowships for 1922-23: Canadian Pacific Railway $1,500, Sir Edmund Osler $500, Sir Edward Kemp $500, Colonel R. W. Leonard (for 1921-22) $500; Canadian Oral Prophylactic Association for Dental Research $3,000; Sir Edmund Osler for Pathological Investigations Fund $1,000; R. A. Reeve Bequest $700; R. Stothers, balance of William Hardie Scholarship Foundation, $700; Boiler Inspection Scholarship $130; Jardine Memorial Prize for poem $100; Dr. R. A. Reeve Prize in Medicine $50; Menorah Prize $50; Sir John Gibson for medal $25; Tracy Prize in Ethics $20; McCaul Scholarship: G. A. H. Fraser $25.65, Principal Hutton $25, A. M. Stewart, K.C., $25; Alumnæ Prize in English (two years) $20. Total $122,703.51. The Imperial Oil Company also have offered a graduate fellowship of $500 for the year 1922-23.

Loans without interest have again been made from the War Memorial Fund to 424 returned soldier students amounting to $120,416. The work of the Alumni in their careful administration of this most valuable fund cannot be too warmly approved. The repayment of loans is meeting the expectations of the committee.

All of which is respectfully submitted.

ROBT. A. FALCONER,
President.

November 23rd, 1922.

APPENDIX A.

(1) Report of the Principal of University College.
(2) Report of the Dean of the Faculty of Medicine.
(3) Report of the Dean of the Faculty of Applied Science.
(4) Report of the Dean of the Faculty of Forestry.
(5) Report of the Dean of the Ontario College of Education.
(6) Report of the Dean of the Faculty of Music.
(7) Report of the Chairman of the Board of Graduate Studies.
(8) Report on Research.
(9) Publications.
(10) Report of the Librarian.
(11) Report of the Director of the Department of Social Service.
(12) Report of Department of Public Health Nursing.
(13) Report of the Director of University Extension and Publicity.
(14) Report of the Director of Department of Military Studies.
(15) Report of the Health Service.
(16) Report of the Warden of Hart House.
(17) Report of Director of Connaught Antitoxin Laboratories.
(18) Statement regarding the Biological Museum.
(19) Statement regarding the Museum of Geology.
(20) Statement regarding the Museum of Palæontology.
(21) Statement regarding the Mineralogical Museum.
(22) Statement regarding the Museum of Archæology.

(I) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE.

(Principal Maurice Hutton.)

The session of 1921-22 for University College has been on the whole uneventful: the congestion of the College being scarcely an event; it has existed before for so long a period. Which does not mean, however, that it can continue much longer: the number of our students still increases, especially the number of the women, which has almost overtaken this year the number of the men: a feat which we had fondly imagined was only an accident of war.

In this matter we have had, fortunately, already a measure of relief; the Governors having taken over a house on St. George Street which will supersede the present Women's Union, constitute a new and better Union for them, and add No. 85 St. George Street to the list, imperfect and inadequate at the best, of women's residences.

The men students still need similar provisions. Their re-organized Society, known now as the Literary and Athletic, has functioned well and has drawn the former Premier, Mr. Meighen, an old member of this Society, to its meetings, and Sir Joseph Flavelle and the Premier of the Province. But it is without reading room or common room; and the College, congested with lecture rooms and administration offices, has tried in vain to meet these needs. Something must be done in the immediate future, if it were only to meet the wants of the Literary and Athletic Society. But in reality these wants are only a small fraction of the disadvantages which come from congestion.

Two Professors retire under the Carnegie system. Professor Craig came to us only recently from McGill and Ann Arbor, but the superannuation of Professor D. R. Keys removes one of the oldest and best-known members of our Staff: a member senior to every one (with one exception) and one of the most versatile, if not the most versatile, Professor who has conferred honour on the Staff. Professor Keys has lectured in turn on English literature, Anglo-Saxon and Italian. He is the best linguist we possess: but that statement does not begin to exhaust his activities and interests. There is, in fact, no subject, practically, on which he has not given or attended lectures, and the Royal Canadian Institute, primarily a scientific rather than a literary society, has been more continuously and more deeply indebted to his labours as secretary and librarian, than to any one except its president, Professor Fields. Rust and moth will never invade Professor Keys, even after his retirement: thieves—unfortunately for themselves—have not the sense to break through and steal a share of his accomplishments.

The generation of students which participated in the great years of Canada and of Unversity College, the years of the Great War, practically reaches its end this session. It has ended auspiciously with the appointment of one of the College's undergraduate soldiers, F. L. Hutchison, to the John Moss Scholarship, established as an open scholarship for the four Colleges, preferably for the best candidate who had served at the front. Mr. Hutchison was conspicuous in the re-organization of the Literary and Athletic Society, and has been its first student-president.

One further development of the year requires notice. The Alumni Association of the graduates of the University has been almost of necessity too large and vague a society to attract interest and support. Accordingly last autumn an Alumni Association for University College was organized. The new Association

exerted itself at once in arranging for a course of six popular lectures in Convocation Hall on Tuesday evenings, which drew a remarkable attendance, and more than fulfilled the hopes and rewarded the labours of the committee in charge.

UNIVERSITY COLLEGE.

COMPLETE ENROLMENTS OF STUDENTS AS OF JANUARY, 1922.

	Men.	Women.	Total.
First year	275	230	505
Second year	135	130	265
Third year	125	111	236
Fourth year	85	84	169
	620	555	1,175
Occasionals	41	34	75
(Duplicates)	..	3	3
	661	586	1,247

SESSION 1921-1922.

STUDENTS IN UNIVERSITY COLLEGE ACCORDING TO RELIGIOUS DENOMINATIONS

Presbyterians	560	Evangelicals	6
Church of England	275	L.D. Saints	3
Baptist	46	Disciples	4
Roman Catholic	30	Unitarians	1
Jews	60	Salvation Army	1
Congregational	7	Methodists	173
Quakers	1	Adventists	1
Lutherans	1	Brethren	2
Christian Science	3		

(2) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE.

(Professor A. Primrose.)

The session just closed completes three years in which the curriculum of study known as the "six year course" has been in operation. The experience gained has further confirmed the opinion, expressed in our last annual report, of the advantages gained by increasing the term of undergraduate study in Medicine from five years to six years. We are still labouring under the disadvantages dependent upon the transition period, but these disadvantages ceased, as far as the first three years were concerned, with the close of last session. The final (clinical) years will continue to be handicapped in this way until the session 1923-1924 when the last of candidates entered in the five year course will have graduated.

Last session, for the first time, a limitation was placed upon the number of students entering the first year. There were 143 registered for the session. This was somewhat in excess of the number determined upon by the Senate and the Board of Governors. It was found impossible, in the first year of the enactment of this new regulation, to adhere strictly to the number authorized without inflicting hardship upon a number of applicants who had fulfilled all the conditions and had applied for registration. Next session the requirements of honour matriculation will be in full force and, as a result of this increased standard, we believe the entering class in future will be restricted within reasonable limits.

We have to record the death of Dr. Allen McKenzie Baines, Emeritus Professor in the Department of Pædiatrics. We have also suffered severe loss in the death of Dr. George A. Bingham, Associate-Professor of Clinical Surgery in this University. Both Dr. Baines and Dr. Bingham were members of the teaching staff of Trinity Medical College, and became members of the Faculty of the University of Toronto at the time of Federation of Trinity and Toronto in 1903. Dr. Baines retired from active teaching in 1919. He was chief of the medical service in the Hospital for Sick Children and head of the Department of Pædiatrics at the time of his retirement. Dr. Bingham was engaged in the discharge of his duties in the Department of Surgery until a few weeks before his death, which took place on March 2nd, 1922. He had been a most faithful and efficient member of the staff of this University; no teacher ever had a more loyal or appreciative class of students. He won high distinction for efficiency and thoroughness in his work. His loyalty to the University and to the Hospital, his breadth of view and sound judgment were outstanding characteristics which will make his loss severely felt.

The annual donation of $50,000.00 provided by the Rockefeller Foundation became available for the first time in the session 1921-1922. This made it possible to reorganize the department of Surgery and to assist, in varying degree, the expansion and development of other departments in the Faculty. In Surgery the work of reorganization has been successfully carried out, so that this department is now on a similar basis of efficiency to that of the Department of Medicine. The endowment to the Department of Medicine by the late Sir John and Lady Eaton permitted the reconstruction of that Department in 1919. During the session a gift of $20,000 from Mrs. A. R. Clarke was used in the establishment and equipment of Clinical Laboratories in the Toronto General Hospital.

Three sessions have been completed since the reorganization of the Department of Medicine. The work has been carried on under the direct supervision of a whole-time Professor, who was appointed to the chair. Success has attended this undertaking and the department has carried on various activities in undergraduate training, in graduate instruction and in research. The present organization maintains a very high grade of efficiency. Progress and success along similar lines have been attained in the sub-department of Pædiatrics.

The appointment of Dr. Clarence L. Starr as whole-time Professor of Surgery was made in July, 1921. Under his direction, as head of the department, an effective reorganization both of staff and teaching has been carried out. The teaching of Surgery to undergraduates has been systematized, the course is thorough and is arranged with a view of providing adequate training for the general practitioner. Graduate instruction has also been carried on and a curriculum of study inaugurated for those proceeding to the higher degrees of Medicine as Specialists in Surgery. Certain members of the staff have been engaged in research problems which have resulted in some notable and valuable contributions to the practice of surgery.

In the Department of Obstetrics and Gynæcology the University has suffered a great loss in the resignation of Professor B. P. Watson, who has accepted appointment to the chair of Obstetrics and Gynæcology in the University of Edinburgh. During the ten years which Professor Watson spent in Toronto he brought his department up to a very high standard of efficiency. The methods he so successfully adopted in the organization of his department attracted wide-spread attention

and admiration. This finally resulted in an urgent call to serve his Alma Mater in Edinburgh, whither he has gone to fill the chair rendered famous in the old days by Sir James Y. Simpson, Sir Alexander Simpson and latterly by Sir Haliday Croom. The efficiency of this department will be well maintained by Dr. W. B. Hendry, who has been appointed Dr. Watson's successor and who will assume the duties of the chair next session.

These three great clinical departments, Medicine, Surgery, Obstetrics and Gynæcology, are now thoroughly equipped to do excellent work and have attained a standard of efficiency of which the University may well be proud.

Dr. D. J. Gibb Wishart has retired from the chair of Oto-Laryngology. He was a member of the teaching staff of Trinity Medical College. He became Associate-Professor in Oto-Laryngology in this University in 1903, at the time of the federation of Trinity and Toronto, and full Professor in his department in 1914, succeeding the late Dr. G. R. McDonagh. He served the University with marked efficiency, and for several years has rendered most valuable service as Chairman of the Committee on Curriculum and Examinations in the Faculty. The chair has been filled by the appointment of Professor Perry G. Goldsmith.

There have been no changes in the teaching staff in the Department of Ophthalmology. As heretofore, instruction has been given to limited classes in the fourth and fifth years.

In the Department of Therapeutics, undergraduate teaching has been carried on both by lectures to the class as a whole and by demonstrations to smaller groups. Dr. F. M. R. Bulmer was appointed Fellow in the department and has been engaged in special research work which is not yet completed, but which promises to be of value not only in Therapeutics but in Medico-legal work.

One year ago the Department of Radiology was constituted with Dr. G. E. Richards, as Associate in Radiology, head of the department. A limited series of lectures and demonstrations have been given to the fourth and fifth years.

The Department of Psychiatry continued as heretofore a course of instruction for undergraduates, consisting of lectures in the fourth year and a series of clinics in the fifth year. The projected expansion of this department both for undergraduate and graduate work is postponed because of the delay in the erection of the Psychiatric Institute. It is hoped the building will be undertaken in the near future.

Professor G. Silverthorne has completed his first session in charge of the Department of Medical Jurisprudence. The course consisted of a series of lectures and class-room demonstrations delivered to the fourth year.

In the preliminary Science Departments we may note the continued efficiency of the instruction given to medical students in the Arts Departments of Biology, Chemistry and Physics.

In the Department of Anatomy it becomes essential to add another senior instructor to the staff. This will become all the more necessary because of the increased work involved in organizing and equipping the new building which is approaching completion and will be ready for occupancy next session. It constitutes an addition of immense importance to our laboratory facilities in the fundamental medical sciences. Professor McMurrich has supervised the arrangement of the plan of the building, and has provided ample facilities for the study

of Anatomy both in the undergraduate course and for the purposes of graduate study and research. During the session just closed members of the staff have had little opportunity for research because practically all the time available has been devoted to teaching. In spite of this handicap, however, some important original investigations have been undertaken.

The Department of Physiology has completed a session of strenuous work. The large classes were chiefly accounted for by the overlapping of the old five and the new six year courses, conditions which will not obtain again. The session just completed constitutes the first year during which instruction in Physiology to medical students was given in one session instead of two. The head of the department is satisfied that this intensive study, concentrated in one session, is advantageous. The results of the examinations this year left no doubt on that point. In future, under the terms of the new curriculum, there will be an opportunity for optional courses in Physiology during the clinical years, when applied aspects of the subject from the clinical standpoint may be studied. During the session two new courses were introduced; one of them an optional course for third-year students on the physiology of respiration and the other a course of lectures on applied physiology. In the laboratories of the Department of Physiology important research has been carried on. Dr. W. P. Warner, along with Professor Olmsted, has been engaged in an investigation of reflex action in mammals; Dr. Taylor has continued a research on peripheral blood flow; Dr. Banting, in collaboration with Mr. C. H. Best, has succeeded in preparing pancreatic extracts which are capable of removing the cardinal symptoms of diabetes. Dr. J. B. Collip of the Department of Pathological Chemistry, also collaborated in this work, especially in the methods of the purification of the extracts. This important discovery has afforded a means of investigating many problems in the physiology of carbohydrates, and in this work Dr. Hepburn and Dr. Latchford and Mr. E. C. Noble have been engaged with extremely gratifying results.

In the Department of Biochemistry, as in Physiology, last session presented the first opportunity for testing the value of the new curriculum of study, i.e., the six year course. The result was entirely satisfactory. Students of the third year participated for the first time in optional courses. The topics chosen were of special interest to the students of scientific medicine. The number of students permitted to take this intensive course was strictly limited; those taking it made excellent and rapid progress and the results of the optional system thus applied were extremely encouraging and satisfactory.

Notwithstanding the heavy burden of teaching placed upon the staff, several important investigations were conducted, bearing especially on the chemical structure of the protein molecule.

The staff of the Department of Pharmacology at the beginning of the session required several readjustments because of the part-time appointment of the Assistant Professor (Dr. N. C. Sharpe) to the division of Industrial Hygiene of the Department of Public Health of Ontario. This reorganization threw an unusually heavy load of undergraduate instruction upon the head of the department.

In addition to teaching duties, investigations were conducted by Professor Henderson on the pharmacological action of atropine, by Dr. Sharpe and Miss Deas on the quantitative estimation of mustard oils in weed seeds and by Dr. Sharpe on the hazards of the painter's trade due to lead, turpentine, benzol, etc.

The Department of Pathology and Bacteriology has been under the direction of Dr. H. B. Maitland because of the absence of Professor Mackenzie during a long illness. Under the terms of the new curriculum (six years' course) the teaching in Bacteriology to the third year was increased from 60 to 154 hours. It was necessary, in addition, because of the overlapping of the five and six years' courses, to give instructions in general Pathology and Histo-pathology to the third year of the old five years' course. In other years the work was carried on as in previous sessions.

Research work has been carried on by Fellows and post-graduate students proceeding to higher degrees. Dr. G. C. Cameron has carried on investigations in epidemic encephalitis: Drs. Linton and Eagles have studied hæmolytic streptococci from scarlet fever: Dr. Dandy has perfected a method of reading capillary blood pressure: Miss Marjorie Webster has been engaged in investigating bacterial mutation: Miss C. J. Fraser has been studying serological grouping of streptococcus viradans from teeth and from type infections: Dr. Maitland has been making a study of d'Herelle's phenomenon, more particularly the application of a quantitative method.

In the Department of Pathological Chemistry the staff was increased by the appointment of Dr. J. B. Collip as Assistant Professor. Undergraduate training in the clinical application of laboratory methods has been greatly increased in amount in this department. This has resulted in much more efficient training for medical students. Graduate work and research have been participated in by the staff and by graduate students. Professor Harding has been engaged in researches on the nature and treatment of nausea and vomiting in pregnancy and in researches on creatinuria, assisted by Mr. Gaebler and Dr. T. G. H. Drake. Professor Collip has studied *rigor mortis* and has investigated digestion in the fowl.

In the Department of Hygiene and Preventive Medicine undergraduate courses have included lectures and demonstrations to the fourth year of the five years' course.

In addition, graduate work has been carried out and included: (1) A course leading to the diploma of Public Health: (2) Lectures to nurses leading to a diploma in Public Health nursing: (3) Research in Preventive Medicine and Hygiene in the Research division of the Connaught Antitoxin Laboratories under the direction of the Head of the Department. Three candidates for the Ph.D. took advantage of the facilities thus offered.

Certain research activities during the session have resulted in the publication of seven papers on tuberculosis, diphtheria toxin, the ripening of virus and the diagnosis of smallpox. Professor Fitzgerald has also in press a book entitled "An Introduction to the Practice of Preventive Medicine," in which use is made of Canadian statistics.

Graduate study:—During the past session there was constituted a school of graduate studies in the University of Toronto. The Faculty of Medicine will have due representation upon the council and executive. Professor J. Playfair McMurrich has been appointed Dean and, when the organization is complete, this body will assume administrative control of the curriculum of study leading to the higher degrees in Medicine.

In recent years the Faculty of Medicine has greatly increased the facilities offered for graduate study. A definite curriculum is now in force for the training of specialists. This demands three years of post-graduate work, and the candidate, after passing the final examinations, is eligible for one of the higher degrees in Medicine, namely, the "M.D.", or the "Ch.M." By this means a student who wishes to qualify as a surgeon or a physician and practise as a specialist, is able to obtain a thorough training to fit him for his particular field of work. Provision is also made for students who come to the University for short courses. Any graduate who applies for courses varying from, say, six weeks to six months, or a year, is referred by the secretary's office to a special official whose duty it is to give the graduate all information as to the facilities offered for such special study as he may desire, and will get him in touch with the departments where his work is to proceed.

During the Christmas vacation, and again at Easter, a short series of clinical lectures and demonstrations for graduates was provided in Medicine, Surgery and Obstetrics and Gynæcology. A summer course in Pædiatrics at the Hospital for Sick Children also proved most popular.

Throughout the session the Faculty, in conjunction with the Ontario Medical Association, provided extension lectures, demonstrations and clinics in different parts of the Province. These have proved of the greatest interest and value and have been taken advantage of by many of the local medical societies in their programme of meetings. This work has developed to a remarkable degree of activity.

Research:—In the various departments research has been conducted extensively. Reference is made in more detail to this work when dealing in this report with the individual departments. Problems of purely scientific value have been studied and successfully solved. Investigations have been carried on by members of the staff which have had special bearing on clinical problems and have resulted in contributions of great value to the practice of medicine and surgery.

(3) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING.

(*C. H. Mitchell, Esq., LL.D.*)

The year just closing has been marked by several features in connection with the Faculty of Applied Science and Engineering.

The revised curricula, upon which much thought and time have been expended, have finally been adopted and issued in the new calendar. Many of the changes have been under consideration for some years and in several cases have been the result of two or three years' trial. The changes are entirely constructive, with a view to meeting conditions clearly demanded in technical education in the country, or likely to be demanded with its anticipated development. The four years' course has been retained but, by reason of the higher entrance standards recently adopted, it has been possible to put certain subjects forward from senior to junior years and thus leave room for new or more comprehensive work in the third and fourth years.

A significant feature of this year has been a considerable increase in the number of students who have sought admission to senior years coming from other Universities, from distant Provinces and other countries. It is considered to indicate a recognition not only of the high standard of instruction, but of the value attached to a degree in Applied Science and Engineering from this University.

Another feature has been the increased number who have taken post-graduate work leading to the degree of Master of Applied Science and it is gratifying that these have been distributed in as many as five departments of the Faculty. This is taken to indicate a realization of the value of the facilities which are now available here for doing post-graduate and research work in these directions. Much attention has been given during the year to the development of post-graduate facilities and, with the special co-operation of the School of Engineering Research (contained within the Faculty) in which a very comprehensive programme has been carried out, a great impetus has undoubtedly been given to post-graduate work in the various branches of Applied Science, which is sure to result in increased activity in the immediate future.

The new building to contain the Departments of Electrical Engineering and Civil Engineering and Applied Mechanics was formally opened in November, 1921. This, with the increased facilities and space afforded, has proved of great value and has enabled the much needed expansion in these Departments. In Electrical Engineering in particular the increased facilities have permitted a much greater efficiency in instruction, which has been directly reflected in the quality of work done.

The Engineering Graduates' reunion, now a yearly event, which was held on this occasion in conjunction with the opening of the new building, again proved the great value of the alumni body in its sympathetic interest and co-operation with the University. This attitude and interest of the graduates of this Faculty is particularly marked, and should be considered as one of the valuable assets of the University.

Two successful special conferences were held in connection with departments in this Faculty. The first of these, in February, that on Town Planning, combining Departments in this Faculty with several of those in Arts, through the medium of University Extension, brought many old graduates and others interested in this important subject to the University for a fortnight, and appeared to have been much appreciated as a very useful effort on the part of the University. A symposium on Water Power held in March, under the direction of the Department of Mechanical Engineering, also attracted wide interest by means of special lectures by graduates and others, experts in their particular branches of this subject. It is hoped that this may be a step toward the establishment of more special post-graduate work in Hydro Electric Power, a subject to which this University should pay special attention, situated as it is at the centre of the hyrdo electric power development in Canada.

In Civil Engineering the revised curriculum has been drawn with a view to broadening the course and making it into what might be considered to be an all-round general course designed not only for engineers, but for those who may contemplate business pursuits more or less allied with technical. The options in the fourth year have been rearranged so that each is well balanced, providing especially for such as municipal, structural, hydraulic and railway groups.

The success of the Summer Survey Camp is now well assured with the completion of its second season. The advantages gained, not only in more efficient instruction but in more time set free during the regular session, fully justify the course which has been pursued in the establishment of the camp. This year there were sixty-seven students of the third year who took the work. As the area owned by the University is limited, it would be advisable to increase it for greater efficiency; this can be done at comparatively small expense while surrounding land is cheap.

In Mining Engineering the curriculum has also been extended by broadening, especially in senior years. This is now a very comprehensive course. It is to be expected that the marked revival of mining activities in Canada may shortly be reflected by increasing numbers of students in this course.

The Department of Mechanical Engineering has been suffering of late years from insufficient equipment. The limited appropriations of the past year have made possible a start to remedy this, but it is to be expected that further substantial appropriations will be required to place these laboratories in a position to meet the growing demands in this important branch, which has to carry not only its own students but those of several other departments as well.

In Chemical Engineering the activities of the country still seem to be reflected in comparatively large numbers of students coming up for courses. This department still has the second largest enrolment in the faculty and is still struggling under a most serious handicap of limited space, requiring to make various shifts for accommodation and equipment. Its post-graduate work is suffering as well as its regular courses, and it is considered that, unless means can shortly be found to increase accommodation, this branch built up now to such a high state of efficiency, will not be able to maintain it.

The Department of Electrical Engineering was finally transferred to its new building and was able to commence the session in October, 1921, completely installed in it. It is now well provided for as to space, and its equipment is almost complete. The importance and size of this department in point of numbers can be appreciated when it is realized that it has had enrolled during the year 240 students of the total of 820 in the Faculty, and that it has given instruction to students of other departments as well as to its own to a total number of 432, mainly in laboratory classes.

The Mechanical Engineering Department is now also well provided with space and is in a position to expand in a manner appropriate to the demand. While in point of numbers this is the smallest of the departments, the importance of this branch in the activities of the country has fully warranted the attention given to it.

(4) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY.

(Dr. C. D. Howe).

The Faculty of Forestry had the largest registration in its history during the past year, there being sixty-two men in attendance, distributed among the classes as follows: first year, twenty-one; second year, thirteen; third year, eleven; fourth year, thirteen; special, four. It is expected, however, that the number will be considerably reduced next year owing to the initiation of the honour matriculation requirements.

Thirteen men will be graduated and this is, also, the largest number graduated at one time. At present twelve have obtained permanent positions, three in the Dominion Forestry Branch and nine in the Ontario Forestry Branch.

Forty-three undergraduates are employed in forestry work during the summer months, twelve by the Dominion and thirty by the Provincial Forestry Branch, and one by a private pulpwood company. It is with great pleasure that I call your attention to the increasing number of our students who are employed by the Ontario Forestry Branch. A few years ago none of our undergraduates were able to find employment with the Province, but this summer almost half the total number of students in attendance are thus employed. For years we had only two graduates on the Provincial staff of foresters, now we have seventeen. It is with great regret that I report the death by drowning of Fred. C. S. French, a member of the freshman class, while at work with a forest survey party in Manitoba. He was one of the most promising men of his class and, having been a practical woodsman as well as a veteran of the late war, he was particularly well qualified for forestry work. This is the first fatal accident that has occurred to any of our students while in the pursuit of their profession, during the fourteen years of the School's existence.

The George E. Bothwell medal was awarded to Gordon G. Cosens, a third year student. This medal for proficiency in Silviculture has been established by the former associates of George Bothwell in the Dominion Forestry Branch. Bothwell was shot in the back by a German officer, whom he was bringing in as a prisoner, in September, 1916. An effort is being made to establish other medals and prizes in memory of the forestry men who fell in the Great War.

We are still in need of increased appropriations to supplement our pathetically inadequate teaching equipment. The arguments demonstrating the necessity of such appropriations in the ordinary annual reports and in special reports from this Faculty for the past ten years still hold good. Others might be added but for the fact that necessity is already acknowledged by all familiar with the situation. Only the means fail to materialize.

(5) REPORT OF THE DEAN OF THE ONTARIO COLLEGE OF EDUCATION.

(*Dr. W. Pakenham*).

The total registration for the session was 353, as against 226 for the previous session. The most marked increase appears in the courses for high school assistants and specialists where the attendance has practically doubled. While a marked improvement in the salaries of high school teachers in Ontario is the chief explanation of this increase, the most significant factor in the increase is the admission to these courses of graduates in Science, Applied Science, Agriculture and Commerce, side by side with graduates in Arts.

In connection with the increased attendance, it is satisfactory to note that, as the Legislature has now appropriated $100,000 with which to begin additions to the College of Education and as the University architects have now completed the necessary plans, the new buildings will probably be ready for use before the end of the coming Session.

The College of Education and the University Schools have passed through a very trying session. The Headmaster, Professor H. J. Crawford, has been seriously ill since December, 1921. In his absence Professor W. C. Ferguson assumed the duties of the Headmaster of the University Schools, and Dr. D. E. Hamilton those of the lecturer in Methods in Classics.

(6) REPORT OF THE DEAN OF THE FACULTY OF MUSIC.

(Dr. A. S. Vogt).

The number of students registering for the course leading to the degree of Bachelor of Music, represented a gratifying increase over the registration of any previous year, and was as follows:—first year, eighteen; second year, nine; third year, two; occasional students, fifteen; total, forty-four.

The number of candidates applying during the year for the local examinations in Music, which examinations are now conducted through the Toronto Conservatory of Music, totalled 9,441, and were distributed as follows:—Piano, 6,611; Organ, 27; Singing, 325; Violin, 214; Sight Singing, 132; Theory of Music (rudiments, harmony, counterpoint, etc.), 2,132. Besides the increasing growth in prestige and influence of these examinations throughout Canada, a significant demand for the Conservatory's examiners has also developed in the United States, where a number of important centres were formed during the year in the States of New York, Michigan, and Indiana.

A series of eighteen lectures was delivered by members of the Faculty as follows:—

Healy Willan, Esq., Mus.Doc., F.R.C.O.:
- January 16—"Laws of Part Writing."
- January 30—"Diatonic (or Secondary) Sevenths."
- February 13—"The Harmonization of Unfigured Bases."
- February 27—"Chromatic Chords."
- March 13—"Counterpoint—Combined Species."
- March 27—"Double Counterpoint."

Albert Ham, Esq., Mus.Doc., F.R.C.O.:
- January 13—"Modern Church Organ Music by English Composers."
- January 27—"Old English Church Composers."
- February 9—"Choral."
- February 16—"Church Cantatas."

F. A. Mouré, Esq.:
- January 23—"The Oratorio."
- February 6—"Some Historical Particulars Regarding Beethoven's Sonatas."
- February 20—"The 18th Century Italians."
- March 6—"The Modern French School."

H. A. Fricker, Esq., M.A., Mus.Bac., F.R.C.O.:
- January 20—"Form in Choral Music."
- February 3—"Form in Choral Music."
- February 24—"Orchestration in Choral Music."
- March 10—"Orchestration in Choral Music."

The special series of organ recitals given in Convocation Hall during the season by the University Organist, F. A. Mouré, Esq., attracted large and warmly interested audiences of students and music lovers generally. Mr. Mouré's programmes were again admirably varied and skilfully chosen, revealing throughout highly commendable catholicity of taste. The recitals added much to the artistic life of the University.

(7) REPORT OF THE CHAIRMAN OF THE BOARD OF GRADUATE STUDIES.

(*Professor J. Playfair McMurrich*).

The number of students enrolled for graduate studies in the session 1921-1922 again shows an increase over that of the preceding year, the total being 198 as compared with 163 in 1920-1921. Of this number 186 were in attendance at the University and twelve were studying *in absentia*. According to their geographical distribution the students may be classified as follows:

Residents of the Province of Ontario	166
Residents of other Provinces	18
Residents of other countries	14
	198

Of these 149 had received their undergraduate training in the University of Toronto and forty-nine in other Universities; sixty-seven were members of the teaching staff of the University and four others were holders of fellowships, but not engaged in teaching.

The distribution of the students in the various departments, based on the subject chosen as the major study, was as follows:—Anatomy, three; Astronomy, two; Bacteriology, three; Biochemistry, six; Biology, four; Botany, thirteen; Chemistry, twenty-two; Classics, nine; Educational Theory, seven; English, fifteen; Food Chemistry, six; Geology, three; German, two; History, twelve; Household Science, three; Hygiene, three; Mathematics, five; Mineralogy, one; Oriental Languages, one; Pathological Chemistry, one; Philosophy, twenty; Physics, seventeen; Physiology, four; Political Science, thirteen; Romance Languages, eleven; Zymology, four.

The degrees sought are shown in the following table:—

Candidates for the degree of Ph.D.	57
Candidates for the degree of M.A.	114
Candidates for the degree of M.D.	7
Students not candidates for a degree	20

During the session fifty-six students completed the requirements for the degree of M.A.; eight those for the degree of Ph.D., and five those for the degree of M.D. The titles of the theses submitted for the degree of Ph.D. were as follows:—

G. H. Brother: "A Study of some Periodic Phenomena in Electro-Chemistry."

G. H. Duff: "The Development of the Geoglossaceæ."

W. R. Fetzer: "The Periodic Phenomena observed during the Electrolysis of Aqueous Solutions of Sodium Sulphate."

O. H. Gaebler: "Creatine and Creatinine."

T. C. McMullen: "Friedel and Crafts' Reaction:—The Intermediate Compounds formed, their Properties and Reactions."

H. A. McTaggart: "Electrification of Liquid Surfaces."

W. H. Martin: "The Scattering of Light by Dust-free Liquids."

P. M. O'Sullivan: "Studies on the Pathological Physiology of Shock."

It has been felt for some time that the organization of graduate studies under the direction of the Board of Graduate Studies did not sufficiently emphasize the importance of these studies in the work of the University. Graduate work seemed to be an addendum to the undergraduate work, rather than a logical

sequence of this and a very important part of the University's work. It lacked the definite status of the undergraduate work conducted by the various faculties, and with a view to remedying this defect the Senate of the University appointed a committee to consider the reorganization of the graduate work carried on in the various departments of the University. This Committee, after much careful deliberation, brought in its report during the past year, and its recommendations were given effect by a statute of the Senate, approved by the Board of Governors.

By this statute practically all graduate work carried on in the various departments of the University is placed under the direction of a School of Graduate Studies, presided over by a Dean and composed of representatives of all those departments of the University that offer or conduct courses of graduate work. The School, through its Executive Council, has the supervision not only of the courses leading to the degrees of M.A., Ph.D. and M.D., which have been for some years under the direction of the Board of Graduate Studies, but also of the graduate work carried on by the Departments of the Faculties of Applied Science and Engineering, Education and Forestry. All departments of the University possessing facilities for graduate work are thus included in the School and will co-operate in the greater development and co-ordination of graduate studies as part of the recognized work of the University.

It is hoped that this new organization, which takes effect with the opening of the academic session 1922-23, will stimulate greater interest in graduate study and research and give such work the recognition it deserves in the curriculum of the University.

By the generosity of certain friends the University is able to offer, for the year 1922-23, seven fellowships to graduate students who wish to pursue studies in any of the courses leading to the degrees of M.A. or Ph.D., preference being given to graduates of Canadian Universities outside the Province of Ontario. Three of these fellowships have been provided by the Canadian Pacific Railway, one by the Imperial Oil Company and one each by Sir Edmund Osler, Sir Edward Kemp and Colonel R. W. Leonard. The following list gives the appointments to these fellowships for the year 1922-23, together with the Universities from which the appointees graduated and the department in which they will pursue their studies:—

Ethel Harris, B.A., British Columbia, Romance Languages.
A. W. Johnson, B.A., Manitoba, Mathematics.
A. L. Stevenson, B.A., British Columbia, English.
C. S. Beals, B.A., Acadia, Physics.
S. J. Dempsey, B.A., Manitoba, Political Science.
T. Butchart, B.A., Alberta, Mathematics.
J. W. Cohen, B.A., McMaster, Philosophy.

The Alexander Mackenzie Fellowships in Political Science and History have been awarded to: —

Adelaide Macdonald, B.A., Toronto, Political Science.
Ethel MacFarlane, B.A., Saskatchewan, History.

The James H. Richardson Research Fellowship in Anatomy has been awarded to: —

W. C. M. Scott.

The George Brown Memorial Fellowship has been awarded to:—
R. H. Macdonald, M.B.

The Ellen Mickle Fellowship has been awarded to:—
J. E. Bates, M.B.

The George Armstrong Peters Scholarships have been awarded to:—
R. I. Harris, M.B.
F. G. Banting, M.B.

(8) REPORT ON RESEARCH.

Anatomy, under Direction of Professor J. P. McMurrich.

I beg to present a report upon the work accomplished on the appropriation which was granted for research in the Department of Anatomy, last year. The moneys expended were partly for material, reagents and other equipment necessary for the carrying on of a research on the terminals of the bronchi in the human lung. In addition, the sum of $250.00 was used to increase the stipend of the holder of the James H. Richardson Fellowship. The holder of this fellowship last year was Dr. H. G. Willson, and during the year he was able to bring to completion his studies upon the terminals of the bronchi in the normal lung, and a paper giving his results was published in the *American Journal of Anatomy,* Vol. XXX. I am pleased to be able to say that, since the publication of this paper, Dr. Willson has received several appreciative letters from colleagues working on the same subject in various parts of the world. In addition to completing this piece of work, Dr. Willson made further studies of the bronchial terminals in the human lung in certain pathological conditions, and this work is now completed and will shortly be ready for publication. He also carried on studies of a comparative nature, which it is hoped he will be able to complete in the near future.

During the year, and with some assistance from the appropriation, Dr. Watt carried on and completed a study of the deposition of calcium salts in colloid media; hoping to throw some light, therefrom, upon the question of bone formation. His results have been brought together in the form of a paper which is in course of publication in the *Biological Bulletin* and should appear shortly.

Biochemistry, under Direction of Professor A. Hunter.

I have the honour to report as follows upon the progress of the research work undertaken by the Department of Biochemistry.

(1) Mr. J. A. Morrell has been engaged upon a study of the action of arginase upon arginine, and the possible application of this action in the determination of arginine. He has definitely ascertained the effect of varying temperature and reaction upon the enzyme, and has shown how to secure a quantitative decomposition of the amino-acid.

(2) Mr. R. G. Smith has completed successfully a study of the rate at which ammonia is liberated in the tryptic digestion of protein; and has made some preliminary experiments upon the action of erepsin in this respect.

(3) Mr. H. Borsook has elaborated methods for the preparation of globin and of its proteoses, has incidentally corrected some current misconceptions of the constitution of globin, and has improved existing methods for the analysis of proteins.

(4) My own researches have been concerned
  (a) with the preparation and testing of pure d-arginine,
  (b) the continuation of last year's work upon the separation, through butyl alcohol, of the products of the tryptic digestion of casein.

The first of these has led to the production of a product of greater optical activity than any heretofore reported. The second, which has proved of exceptional difficulty, is still unfinished.

The results of the year's work were so far of definite value that they could be incorporated in four papers which have just been presented to the Royal Society of Canada.

Biology, under Direction of Professor B. A. Bensley.

Progress was made during the year in various lines of research undertaken by individual members of the departmental staff. Some effort was directed towards placing the fisheries research on a more permanent basis, the larger portion of the research appropriation being used for this purpose. Previous work undertaken for the organization of the Fisheries Laboratory and for field work has resulted in a series of nine papers contributed by Messrs. Clemens, Coventry, Dymond, Adamstone, Bigelow, Harkness and Bensley, the technical numbers of which apply chiefly to Lake Erie. A new series of the University Studies to be designated separately from the Biological Series has been instituted for this purpose and for future publications in the limnological field. During the summer of 1921 a field party was maintained on Lake Nipigon in co-operation with the technical staff of the Royal Ontario Museum of Zoology and the Provincial authorities. The results so far as obtained are in course of preparation for publication and will form a second volume comprising papers on the physical features of Lake Nipigon, its fishes, plankton, bottom organisms, a systematic study of the mollusca, analysis of food materials, contributed by Professor Clemens and associates. Accessory papers on geological and physical features important to the fisheries work are being contributed by Dean Coleman and by Mr. Conner of the Dominion Meteorological Service.

Following is a summary of research other than limnological work now in progress or recently published:—

(1) Cytological studies on amphibian eggs, Professor Piersol.

(2) Morphological studies on orthopteroid insects, growth stages and breeding places of sub-arctic dragon flies, subcutaneous myiasis in infants with life history of the parasite, Professor Walker.

(3) Musculature of orthopteroid insects and studies of a new parasitic wasp, Miss Ford.

(4) Study and reconstruction of the baboon placenta, experimental modification of growth in amphibian eggs, Professor Coventry.

(5) Genetics of interspecific crosses, multiple factorial basis of size, experimental studies on the mode of action of certain acids on living substance, Dr. J. W. MacArthur.

(6) Respiratory reflexes, vascularity of the brain at different ages, neurological technique, Dr. E. H. Craigie.

(7) Experimental studies of peritoneal reactions in mammals, urino-genital anomalies, hypobranchial system in elasmobranchs, nematode development, Dr. W. H. T. Baillie.

(8) Preliminary classification of marine arthropods, Mr. M. I. Sparks, and the distribution of marine animals of Minas Channel, Cobequid Bay and the Schubenacadie River, Nova Scotia, Mr. A. H. Leim, under the supervision of Professor Huntsman. A number of students under the direction of Professor Huntsman were engaged with problems of marine biology and assisted in the summer work of the St. Andrews Biological Station, including, in addition to Mr. Leim and Mr. Sparks, Miss F. Fraser, Miss M. E. Reid, and Miss E. M. Taylor.

Botany, Under Direction of Professor J. H. Faull.

The Department of Botany has just closed an active year in research. The students who have co-operated with the staff comprise graduates of eight different institutions. The problems under investigation have covered a wide field of inquiry, and while they are not of an Experiment Station type, yet a large proportion of them deal with matters that are fundamentally related to plant industries, including Agriculture and Forestry. A strong stimulus has been imparted as a result of the support yielded by the Special Research Fund, the University, and the Dominion Advisory Board Scholarships. It is especially to the point to call attention to the fact that through these means some students and some instructors have been enabled to continue their work for the whole or a part of the summer, that is during the one season of the year in which plants can be best studied in their natural habitats and plant materials can be most advantageously obtained. That the public is taking a continuously increasing interest is evidenced by the larger number of inquiries coming to us from various quarters. The following account summarizes the work of the year; the publications from the Department appear in another part of this report.

1. Cryptogamic Botany, Mycology and Pathology under the Direction of Professor J. H. Faull.

Faull, J. H.

(1) A monographic study of the diseases of the balsam.

(2) The biology of the true tinder fungus, including studies on its parasitism in living timber. This work is nearly completed.

(3) Further studies on the needle blight of the white pine.

Duff, G. H.

(4) The development of the geoglossaceæ—a study of the developmental stages of various members of this family, their sexuality and their place in the natural classification of the fungi. This work is completed and a paper based on it will shortly appear in the *Botanical Gazette*.

Bell, H. P.

(5) Studies on the rusts of the balsam—new developmental and cytological studies and an account of new species discovered by him in northern Ontario. A first paper on this subject has been written and submitted for review.

Fritz, Miss C. W.

(6) Cultural diagnostic studies of timber-destroying fungi—an intensive laboratory investigation based on bacteriological technique.

Walker, A. R.

(7) Cytological studies on *Keithia thujina*—an interesting fungus parasitic on arbor vitæ.

(8) Cultural and physiological studies on a botrytis mold parasitic on hemp plants.

Berkeley, G. H.

(9) Comparative cultural and biochemical studies of several species or strains of botrytis. A considerable part of this work has been carried on in the laboratories of Biochemistry under the direction of Professor A. Hunter.

Macleod, C. H.

(10) Comparative anatomical studies on the heart-wood rots of balsam.

Moss, E. H.

(11) Development of *Collybia velutina*—a life-history study of a mushroom. A paper embodying the results of this completed work has been offered for publication.

(12) Observations on two popular diseases. Notes embodying the results are to appear shortly in *Phytopathology.*

Currie, Miss M. E.

(13) Studies on the parasitism of the slime molds—an extensive investigation completed last September.

Adamstone, F. B.

(14) A structural study of a fungus found on balsam leaves—perfect and asexual stages.

2. Plant Physiology under the Direction of Dr. G. H. Duff and Professor J. H. Faull.

Raciot, H. N.

(15) Correlation between pruning and other injuries to the crown of a plant and the health and development of its root system—a fundamental physiological investigation.

3. Phanerogamic Botany, Genetics and Plant Breeding under the Direction of Professor R. B. Thomson.

A. Poisonous Plants.

Sifton, H. B.

(16) Anatomy of *Cicuta maculata* (Cowbane). The poisonous substance has been located in ducts in the stem, swollen roots and the rootstock. Peculiarities in the anatomical structure have also been found which will serve as a means of identification of this plant in the stomach of poisoned animals.

(17) Structural studies on the seed of wormseed mustard.

(18) Tests on sweet clover as a fodder in relation to stock poisoning.

B. Fossil Plants.

Thomson, R. B.

(19) Work is being carried out on the structure of the coal measure plants of Canada.

C. Wood Structure.

Wright, Miss J. G.

(20) Investigations on the structure of the conducting elements of vascular plants. The work on the lower vascular plants has been completed.

Sifton, H. B.

(21) Studies on the "bars" or "rims" of sanio in the wood of the gymnosperms.

D. Resin Tissue.

A comprehensive study of the character and distribution of the resin (turpentine) producing tissue of the pines and other conifers is being made by several collaborators. Experimental work is also being carried out with living material.

Hart, N. C.

(22) The origin of resin canals in the secondary wood.

Haining, Miss H. I.

(23) Resin canals in the primary tissues.

McCulloch, Miss M. V. and Miss J. M. McGugan.

(24) The distribution of resin canals under normal and traumatic conditions. Many of the results so far attained are completely at variance with previous ideas. Although the work has been undertaken from a purely botanical standpoint the facts and principles evolved have a direct bearing on the practice of resin and turpentine production for economic purposes. A joint memoir is under way.

E. Genetics and Plant Breeding.

Thomson, R. B. and collaborators.

(25) On the heredity of shape and colour in radishes.

(26) On the colour of portulaca flowers.

(27) On crosses involving annual and perennial habits.

(28) On hybridization of trees. A hybrid between a spruce and a balsam has been found with a blending of the wood structure of the two parents. This is the first instance of its kind to be recorded. The occurrence of this generic hybrid demonstrates the possibility of success with conifer breeding. The description will soon appear in the *Journal of Heredity*.

Chemistry, under Direction of Professor W. Lash Miller.

In Professor Ferguson's laboratory equipment has been installed during the session for the exact determination of transition temperatures, melting-points and specific heats of chemical compounds and solutions, designed by himself from experience gained in the Geophysical Laboratory of Washington. Papers on the melting-point of sodium chloride, and on the melting-intervals of certain under-cooled solutions, published in the Journal of the American Chemical Society,

give the results of the first experimental work carried out with this apparatus. There is also under construction apparatus of a new type for determining the tensions and compositions of the vapours given off by mixtures of two volatile liquids; results have already been obtained with mixtures of benzone and hexane. The research on the stability relations of the iron oxides has made satisfactory progress, and the first results of a study of the passage of helium, hydrogen and other gases through glass and through silica have been published.

The researches longer established, viz.:—those on Friedel and Craft's Reaction (under the direction of Prof. F. B. Allan), on the scattering of light by liquids (Prof. F. B. Kenrick), and on the effect of chemicals on the rate of reproduction of micro-organisms (Prof. W. Lash Miller) have led to the publication of a number of papers in the scientific journals; researches on electro-chemical problems (Prof. J. T. Burt-Gerrans) and on the methods of Analytical Chemistry (Prof. L. J. Rogers) are under way. A list of the papers published from this department is given in Appendix E.

During the past year the degree of Doctor of Philosophy was awarded to four candidates from this department, viz.:—Messrs. G. H. Brother, W. R. Fetzer, W. H. Martin and T. C. McMullen. Ten obtained the degree of Master of Arts, viz.:—Messrs. R. C. Cantelo, R. L. Dorrance, D. M. Findlay, F. R. Lorriman, G. H. W. Lucas, H. C. Oddy, T. P. G. Shaw, A. E. R. Westman, K. L. Wismer, and Miss E. M. Taylor. The degree of Master of Applied Science was awarded to Mr. I. M. Logan on a research carried out in this department.

The following is a list of those engaged in experimental research in the Department of Chemistry during the past winter; one of them (Mr. T. C. McMullen) held a fellowship from the Honorary Advisory Council; one (Mr. G. W. H. Lucas) a studentship; and three (Mr. H. Oddy, Miss J. B. Lane, Miss E. Taylor) held bursaries. Fourteen were graduates of the University of Toronto and seven were graduates of other Universities; seven were undergraduate students of the fourth year.

Prof. J. B. Ferguson:—Thermochemical study of undercooled liquids.
Prof. J. T. Burt-Gerrans:—Concentration changes at the cathode during electrolysis of acid solutions of copper sulphate.
Prof. W. S. Funnell:—The partial pressures of tro-component solutions.
Anderson, C. M.:—The preparation of dust-free liquids.
Burwash, Miss F. M.:—The determination of phosphorus in phosphor-bronze.
Everest, T. E.:—The electrodeposition of copper and of nickel on aluminium.
Fetzer, W. R., M.A.:—The belectrolysis of aqueous solutions of sodium sulphide.
Findlay, D. M., B.A.:—Stability relations of the lower oxides of iron.
Gilbert, C. S., M.A.:—The superheating of liquids.
Gordon, C.:—Polarization during electrolysis of copper sulphate solutions.
Haas, E., M.A.:—Relative solubility of crystal faces.
Hamilton, C. H.:—Variations in the mechanical properties of aluminous
Heatley, A. H.:—A study of "throw" in copper plating.
Hoover, G. I.:—Equilibrium between iron hydrogen steam and iron oxides.
Lane, Miss J. B., B.A.:—Toxological determination of strychnine.
Logan, I. M., B.A.:—Reactions of zircon in the electric furnace.
Leaf, W. B., M.A.:—The behaviour of yeast towards methyl-violet.

Lorriman, F., B.A.:—The reaction of acenaphthene with phthalic anhydride, abrasives.
and aluminium chloride.
Lucas, G. H. W., B.A.:—Quantitative determination of bios.
Martin, W. H., M.A.:—Light scattering by dust-free liquids.
McMullen, T. C., M.A.:—The intermediate compounds in the reaction between phthalic anhydride, aluminium chloride and aromatic hydrocarbons.
Oddy, H., M.A.:—Maleic anhydride in Friedel and Craft's Reaction.
Ratcliffe, J. H., B.A.Sc.:—The limiting current in sodium sulphide solutions.
Rebbeck, J. W., M.A.:—The behaviour of glass on electrolysis.
Taylor, Miss E., B.A.:—The effect of acids on the rate of reproduction of yeast.
Westman, A. E. R., B.A.:—Characteristics of electric furnace arcs.
Williams, G. A., M.A.:—Diffusion of hydrogen and of helium through silica glass.
Wismer, K. L., B.A.:—Supersaturated solutions of gases.

Geology, under Direction of Professor A. P. Coleman.

GEOLOGY:—*Professor A. P. Coleman.*

Field work was carried on in the Rocky Mountains and in the Interior Plateau of British Columbia during July, August and part of September continuing the investigations begun in 1920 as to the extent and thickness of the Cordilleran Ice Sheet.

Professor A. MacLean has carried on experiments to determine the differential weathering of stone under natural and artificial conditions.

PALÆONTOLOGY:—*Professor W. A. Parks.*

During the summer of 1921 field work was done in the vicinity of Toronto, at Collingwood, and at Meaford in connection with the geology and palæontology of the Lorraine formation. An expedition was conducted in the bad lands of Alberta for Vertebrate fossils: this expedition was successful in securing several skeletons and major parts of dinosaurs and slabs with fossil leaves.

During the winter, with the assistance of Miss M. Fritz, B.A., the Cephalopoda, Gastropoda, and Vermes from the Toronto rocks have been described and figured. One of the dinosaur skeletons obtained by the expedition of 1920 has been figured and described in detail as a new genus and species under the name Parasaurolophus Walkeri.

Mr. W. S. Dyer.

Mr. Dyer made extensive collections of Richmond fossils on the Credit River and at Meaford during the summer of 1921. The Bryozoa of this collection have been examined during the winter: forty species are recognized of which twenty are new to science.

The publications issued by the Department are to be found under that heading.

Household Science, under Direction of Professor Annie L. Laird.

Miss Coatsworth, who has held the position of research worker, has started an investigation as to the solubility of enamel from enamelware cooking utensils. It was proposed that she repeat some previous investigations dealing with the solution of antimony, but so far, no samples have been procured which show soluble antimony. However, she has proved tin to be dissolved out in appreciable quantities under the action of certain acid foods. The amount dissolved under certain conditions is being investigated with a view to finding out whether the quantity is sufficient to make it undesirable to use enamel-ware for the cooking of acid foods.

Miss Graper has also been doing research, her subject being the effect of diet on the physical and mental development of undernourished children. She has worked with eight school children who were considered by both teacher and school nurse as below par both mentally and physically. One group of four children came for a noon-day lunch five days a week for a period of ten weeks, and then a second group came for a similar period. The results were in some cases quite striking. With regard to physical gains, one child gained seven pounds in three months and another over six pounds in the same time. The others did not make such rapid gains but all improved in physical condition and the teachers reported increased activity as a result of the feeding. Intelligence tests were used as an indication of mentality, and six out of the eight gained one year or more in mental age within the two or three months, one made only half this gain, while one boy, whose low mentality is probably hereditary, showed no improvement. The investigation seemed to show that proper feeding can do much to improve both the mental and physical condition of children who are below normal. It also indicated that some children who are thought to be feeble-minded are really not lacking in brain cells, but apparently their mental ability has not been developed on account of poor physical condition, and when this is improved the child appears normal.

Mineralogy, under Direction of Professor T. L. Walker.

During the past year Professors Walker and Parsons spent two months in field work in the trap regions of Nova Scotia studying the history of the traps and collecting material for a study of the rocks and minerals of the region. The work is being continued during the present year. As a result of this work considerable progress has been made in our knowledge of the conditions under which the rocks have been formed and in regard to the genesis of the zeolites contained in them. Professor Ellis Thomson has conducted investigations into the nature and distribution of telluride ores in Canada. Without the assistance of the research assistant, E. W. Todd, B.A., who conducted the necessary chemical work, it would have been impossible for the staff to carry this work to completion. The results of this work are being published, along with papers on other Canadian minerals, in a forthcoming *University Study*.

Palæontology, under Direction of Professor W. A. Parks

During the summer of 1921 another expedition was undertaken to the Red Deer River, Alberta, in search of fossil reptiles in that rich area.

The expedition acquired six major specimens besides many minor ones. The expedition of 1921-1922 resulted as below:

(1) Almost complete skeleton of an armoured dinosaur (Stegosaurus).
(2) Head and neck of a trachodon; probably a new species.
(3) Fair skeleton of a trachodont like cheneosaurus, probably new.
(4) Large skull of a form like anchiceratops—5 ft. 6 in. long; new.
(5) Fragmental skeleton of a carnivorous dinosaur.

During the past winter the skeleton of parasaurolophus walkeri was mounted and the description will appear in *University Studies* at an early date. This new genus and species has been called by Dr. Gilmore "One of the most remarkable dinosaurs ever discovered."

In Invertebrate Palæontology the third part of a series on the geology and palæontology of the Toronto District was prepared by Miss M. Fritz and myself. This contribution is now in press. Mr. W. S. Dyer worked on the bryozoa of the Credit River: he has identified forty-two species where only a few were known before and has described fifteen new species and four new varieties.

Physics, under Direction of Professor J. C. McLennan.

A. Researches under the general direction of Professor J. C. McLennan.

(1) On the excitation of characteristic X-rays from light elements.
By Professor J. C. McLennan, F.R.S., and Miss M. L. Clark, B.A.

In this investigation critical potentials have been determined for lithium, beryllium, boron, and carbon. From these the critical absorption wave lengths of the K and L series have been deduced for the four elements.

(2) On the Liquefaction of Hydrogen and of Helium.
By Professor J. C. McLennan, F.R.S., and Mr. G. M. Shrum, M.A.

In this investigation steady progress has been made during the past year in the problem of liquefying hydrogen and helium. The newly designed apparatus for purifying and liquefying hydrogen has been constructed and erected. In order to make the equipment complete a compressor which has been constructed and is now en route to Toronto must be installed. The newly designed apparatus for purifying and liquefying helium has been constructed and is at present being erected.

(3) On the Structure of the Wave Length λ=6708 å.u. of the Isotopes of Lithium.
By Professor J. C. McLennan, F.R.S., and Mr. D. S. Ainslie, M.A.

With a vacuum arc in lithium vapour it was found that the wave length λ=6708 å.u. consisted of two close doublets. The investigation has led the authors to the conclusion that these two doublets originate in the two isotopes of lithium with atomic weights six and seven.

(4) On the Absorption of the Wave Length λ=5461 å.u., and of its Satellites by Ionised Mercury Vapour.
Professor J. C. McLennan, F.R.S., Mr. D. S. Ainslie, M.A., and Miss F. M. Cale, B.A.

In this investigation it was found that ionised mercury vapour could not be made to absorb any of the components of the wave length λ=5461 å.u. except the main line and the two satellites closest to it. Certain considerations lead to the view that the absorption of these components is possibly due to the fact that mercury consists of a series of isotopes with atomic weights 197-200, 202, 204.

(5) On the Prism Method of Determining the Refractive Indices of Metallic Vapours.

By Mr. H. Grayson Smith, B.A.

In this investigation the author has found that fused quartz prisms are not suitable for determining the refractive indices of the vapours of metals having high melting points, such as calcium. Investigation has shown, however, that the refractive indices of the vapours of metals having high melting points can probably be obtained by the use of a Jamin interferometer provided with vapour tubes of fused quartz.

(6) On the Photography of Infra-red Spectra.

By Mr. V. P. Lubovich, and Miss E. M. Pearen, B.A.

In this investigation the absorption of various dyes for staining photographic plates was measured. The absorption by various filters was also investigated. Spectrograms were made of the infra-red spectrum of mercury up to 11,000 å.u., with plates dyed and treated in various ways. The structure of the wave length λ=10,140 å.u., was investigated.

(7) On the Application of the Theory of Magnetism to the Calculation of Atomic Diameters.

By Mr. J. F. T. Young, M.A.

In this investigation the magnetic constants of the elements have been collected and some interesting relations noted within the groups of the periodic system. An application of the Langevin-Weiss theory of magnetism has led to the evaluation of the atomic diameters of the diamagnetic elements based on the atomic models of both Bohr and Langmuir.

(8) The Destruction by Ultraviolet Light of the Fluorescing Power of Dilute Solutions of Æsculin.

By Miss F. M. Cale, B.A.

In this investigation experiments were performed on the fluorescence of dilute solutions of æsculin. It was found that (a) the intensity of fluorescence reached a maximum with increasing concentration, (b) On exposing the solution to ultraviolet light the rate of decay was rapid as first, then decreased as the solution was weakened by exposure to the light. (c) The solutions continued to decay very slowly after even a short exposure and in time lost all their fluorescence. (d) Ozone passed through the solutions renders them non-fluorescent.

(9) On the Photoelectric Conductivity of Diamond and other Phosphorescent Crystals.

By Miss M. Levi, B.A.

In this investigation the spectrophotoelectric property of crystals was examined. It was found that: (a) Of six diamond crystals examined, only two show a change in electrical conductivity when exposed to light. (b) The curve between photoelectric current per unit of exciting light energy, and wave length of exciting light, shows a number of maxima with rise in sensitivity in the ultraviolet, terminating in a maximum at 2,536 å.u. (c) The diamonds which were photosensitive show unidirectional conductivity. (d) All the diamonds were fluorescent, and one of the photo-sensitive crystals was phosphorescent. (e) No photoelectric effect was obtained with crystals of fluorescent kunsite or willemite.

(10) On the Low Voltage Arc Spectrum of Argon and on the Absorption Spectrum of Argon.

By Mr. W. W. Shaver, M.A.

The low voltage arc spectrum of argon has been studied using variously speeded electrons from a hot tungsten filament as the means of exciting the arc spectrum by their bombardment of the atoms of argon gas. Photographs of the spectra of radiations produced by the electronic bombardment have been obtained, the accelerating field varying from 10 to 115 volts. The spectrograms show that at about 15.5 volts the red argon spectrum appears and when the voltage is increased the blue spectrum is brought out as the accelerating field is varied from 30 to 37 volts. Some additional lines appear when the voltage is further increased and the relative intensities are also changed as is shown by a comparison of the photographs taken at 54 and 115 volts.

With a mixture of eighty per cent. argon and twenty per cent. nitrogen the absorption spectrum of these mixed gases (unexcited) was photographed, the pressure of the absorbing column being 128 atmospheres. No absorption was evident from the wave lengths λ=7,000 å.u. to =2,100 å.u.

The absorption spectrum of pure argon in a quartz tube at pressures from 12 cm. to .5 cm. of mercury was studied, the gas being excited in various ways by different types of electric discharge. No absorption was observed.

(11) On the Crystal Structure of Heusler's Alloys.

By Mr. J. F. T. Young, M.A.

In this investigation the crystal structure of the elements manganese, copper, and aluminium has been investigated by the use of X-rays. Progress is now being made on the investigation of the crystal structure of Heusler alloys by the same method.

(12) On the Explosion pressures generated by Mixtures of Various Gases and Vapours.

By Mr. H. J. C. Ireton, M.A.

In this investigation explosion pressures are being investigated by means of deflections given to cathode rays by the charges generated on the faces of piezo-electric crystals by the pressures to which the latter are subjected. The investigation will include the study of the explosion pressures generated by mixtures of certain simple gases and by mixtures of gases with the vapours of various constituents of petroleum.

(13) Recoil Phenomena in Various Gases.

By Mr. W. C. McQuarrie, M.A.

In this investigation an attempt is being made by the method of C. T. R. Wilson to photograph the cloud tracks of alpha rays and the recoil particles produced by their impact. In particular, experiments are being made with the gases oxygen, nitrogen, helium and with compound gases containing carbon. The object of the experiments is to determine the structure of the nuclei of atoms of the elements mentioned.

(14) On the Refractivity of Air and Oxygen at High Pressures.
By Professor John Satterly, and Miss H. I. Eadie, B.A.

The object of this investigation is to determine the refractivity of air and of oxygen at very high pressures over as wide a range of wave lengths as possible.

(15) Spectroscopy:—A Series of Investigations.
By Professor J. C. McLennan and Mr. D. S. Ainslie.

This series of investigations is being carried out with the object of determining the series spectra of such elements as lead and tin, and the extreme ultraviolet spectra of the alkali metals and other elements.

(16) Electrodeless Discharge in Sulphur.
By Mr. D. S. Ainslie, M.A.

In this investigation the spectrum of sulphur is being investigated by the use of the electrodeless discharge.

B. Researches under the Direction of Professor E. F. Burton.

The work in research on colloidal solutions is a continuation of that already reported. These problems are receiving attention at the present time:

(1) An improved method whereby the centrifuge is used to indicate in a short time the coagulating power of electrolytes on colloidal solutions: measurements have been made to standardise the method.

(2) An exhaustive series of experiments is under way to determine accurately the effect of viscosity on the mobilities of electrolytic ions and colloidal particles.

(3) Experiments to determine the effect of agar agar and various proteins on the charge possessed by a colloidal particle; this latter work has a bearing on certain colloidal tests carried out on cerebrospinal fluid.

C. Researches by Dr. John Satterly.

(1) The Law of the Crookes' Radiometer.
Experiments have been made to decide between the theories which Crookes and Reynolds advanced to explain the action of the radiometer.

(2) Comparison of a Capillary Flow Meter and a Gas Meter. In this investigation comparisons have been made over large ranges of flows and pressures. The point where instability of flow sets in is being carefully studied; also the variation of the critical velocity with temperature. This last has an important bearing in the study of the viscosity of gases.

D. Investigations being carried out by Professor H. A. McTaggart.

The investigations being carried out include an examination of the natural electric charge found to exist at the surface of ionising fluids.

The research has thus far dealt with the charge at the surface of certain aqueous solutions in contact with air, the method employed being to observe the motion under an electric field of small bubbles of gas in the solution. The results have been published in the *Philosophical Magazine* and in a thesis presented for the degree of Doctor of Philosophy.

Questions that have come up during the research are:

(1) The possible variation of the charge with the curvature of the surface.

(2) The measurement of the effect on the surface charge of certain colloids in the liquid.

E. Researches by Professor Gilchrist.

(1) The extension of the Mathematical Theory of the width of X-ray Spectral Lines.
By Professor L. Gilchrist.

(2) On the Effects produced by X-rays on Certain Organisms.
By Professor L. Gilchrist, in collaboration with Professor Speakman and Miss Howell.

Physiology, under Direction of Professor J. J. R. Macleod.

During the academic year 1921-22 research in the Department of Physiology has been actively engaged in by all members of the teaching staff as well as by Drs. Fidlar, Banting and Hepburn, who became associated with it for this purpose. Dr. Fidlar is supported by a grant from the research appropriation, Dr. Banting gave all of his time during the summer months, being paid from the same fund, but during the teaching months he held a teaching appointment in the Department of Pharmacology. Dr. Hepburn was W. T. Porter Research Fellow of the American Physiological Society, and it is a compliment to the University of Toronto that this Society should have made the first award of this scholarship to one of its graduates.

The most outstanding results have been obtained in the work initiated by Dr. Banting. In collaboration with Mr. C. H. Best, M.A. a research fellow, he found that an extract could be prepared from partially degenerated pancreas having the effect of lowering the percentage of blood sugar and the amount of sugar in the urine of dogs rendered diabetic by removal of the pancreas. Similarly active extracts were then prepared from fœtal pancreas, and finally with the collaboration of J. B. Collip (on leave of absence from the University of Alberta), an extract was prepared from ox pancreas that was suitable for administration to patients. This extract—styled insulin—was then tested in the Medical Clinic of the Toronto General Hospital (in cases under the supervision of Drs. W. R. Campbell and A. Fletcher) and found to be capable of removing all the cardinal symptoms of the disease. As an outcome of these results the investigation was extended and E. C. Noble, M.A., a research fellow, J. Hepburn, M.B. and J. Latchford, M.B. participated in it. As a result of excellent team work, a thorough survey was made of the exact physiological effects of insulin, and among other things it was found to have a profound influence, not only on the sugar of the urine, but also on the respiratory quotient, indicating that it affects the ultimate oxidation of glucose, on glycogen formation, in the mobilization of fat and on the glucose consumption by the heart. It was also found to cause characteristic symptoms on rabbits, when given in excess, and the danger signals of these symptoms were worked out and the method for completely antidoting them discovered. This discovery has found invaluable application in clinical practice. Methods of dosage and of large scale preparation were also investigated and in this work the facilities of the Connaught Laboratories were generously made available. The results of these investigations have appeared in the following publications:—

1. Banting & Best. Journal Laboratory and Clinical Medicine vii, No. 8.
2. Banting & Best. Ibid.
3. Banting, Best & Macleod. Am. Journ. Physiol. lxii, p. 162.
4. Banting, Best & Collip, Macleod & Noble, Trans. Roy. Soc. Comm. May, 1922.
5. Hepburn & Latchford. Am. Journ. Physiol. lxii. 177.
6. Banting, Best, Collip, Macleod & Noble. Ibid. 162.
7. Banting, Best, Collip, Campbell & Fletcher. Journ. Can. Med. Assoc., March, 1922.

Successful investigations have also been carried out by Professor J. M. D. Olmsted, working in collaboration with Dr. W. P. Warner. They have found that the latent periods of reciprocally acting muscles are not identical, and have suggested a satisfactory explanation for this result. The application of the "all or nothing" principle in spinal reflex action was also investigated.

Dr. N. B. Taylor has continued his investigations on blood flow in the hands and feet, and on the spread of temperature changes in the tissues. Dr. Taylor also published observations on a student who could voluntarily accelerate the heart's action. The results of the above researches have been published as follows:

Olmsted and Warner .....Am. Journ. Physiol. LXI, 106
Taylor .....Journ. Lab. & Clin. Med. VII.
Taylor .....Am. Journ. Physiol. LXI, 135.

In the early part of the session a paper on the relative values of the so-called hormone and the nervous control of the respiratory centre was published, embodying investigations made with S.U. Page, partly during the previous year. Macleod & Page, Am. Journ. Physiol., LX, 134.

Psychology, under Direction of Professor G. S. Brett.

Three problems have been worked on:

(1) Measurement of muscle action—a comparison of flexion and extension efficiency of the wrist.

(2) The application of Group Intelligence Tests to selected Public School. Collegiate and College pupils, and of Emotional Stability Tests to College students taking Psychology.

(3) A minor study in visual perception.

Through the services of Miss Hearn, research assistant, the computation of the results in (1) has been completed and the results are now being prepared for publication.

The work upon tests has already led to very practical results in the school where it was conducted and the principles require to be thoroughly worked out to permit of extension to other schools. This is now well under way. More advanced tests were given to 240 collegiate pupils and 400 first year students in Arts. These results are now ready to be correlated with the pupils' standing for this year, upon which the conclusions regarding the tests will be based. The standardization of emotional stability tests has been carried out with approximately 250 students of Arts and Medicine. The compilation of the above results has been made possible by the purchase of a Monroe Calculating Machine out of our research grant for this year.

Investigation upon the mobility of intensive changes in the field of vision has been conducted by Mr. Couch, fourth year student of Honour Biology and Medicine, who selected Psychology for his six hours' special study per week.

Zymology, under Direction of Dr. H. B. Speakman.

During the past academic year the laboratories of the Department have been fully occupied by the following groups of students:

4th year Chemical Engineering, thesis work 3
4th year Arts, Chemistry, thesis work 2
M.A. candidates 3
Ph.D. candidates 2

The nature of the problems which formed the basis of our work is as follows:

(*a*) "The biochemistry of the bacterial association, B, granulobacter pectinovorum, bacterium volutans."

(*b*) "The nitrogen metabolism of B. granulobacter pectinovorum."

(*c*) "Influence of initial H-ion concentration on the production of acetone from carbohydrates."

(*d*) "Relationship between molecular structure and acid production during the fermentation of sugars by bacteria."

(*e*) "Influence of X-rays on the growth and morphology of mucor mucedo."

(*f*) "The effects of sodium chloride on the growth and metabolism of yeast."

The work in connection with the use of X-rays is being done in collaboration with workers in other departments. The problem is part of the programme of the University Medical Research Committee of the Department of Health, Ottawa.

At the close of the academic year Mr. Luck was awarded the 1851 Scholarship for his work in connection with the yeast problem.

Medical Research

The following work was undertaken during the past session in the laboratory of the Committee of Experimental Research. Some of this work is not yet completed:—

Drs. Banting and Best: Research in transplantation of the pancreas.

Dr. O. H. Gaeblar: A research in creatinurea.

Professor H. B. Speakman: The influence of X-ray on cell activity.

Dr. R. D. Rudolf: Investigation of the degree of absorption of arsenic injection in the spinal meninges.

Drs. R. I. Harris and Tisdale: Factors which influence the deposition of bone in normal and pathological conditions.

Drs. C. B. Parker and E. E. Shouldice: The effect of intravenous and interstitial fluid in the treatment of ileus.

Dr. Costain: Experiments in the treatment of general peritonitis.

Dr. F. F. Tisdale: Investigations in rickets.

Dr. E. A. Bott: The objective measurement of emotional processes in terms of a psycho-galvanic reflex.

Dr. A. P. Hart: Experiments in rheumatism.

Drs. Gallie and LeMesurier have published, during the year, papers on the result of experimental work in the laboratory. The papers had to do with the

use of fæcial sutures. Drs. Tisdale and Harris have published together and separately, papers relating to the production of bone, and the calcium and phosphorate content of the blood. Dr. Costain has a paper in now for publication on the treatment of general peritonitis by means of draining the thoracic duct.

School of Engineering Research, under Direction of the Faculty of Applied Science and Engineering.

The School of Engineering Research has made very encouraging progress during the past academic year. Bulletin No. 2, containing seventeen original papers from four departments of this Faculty, appeared during the year, and was given a wide circulation among the engineering profession, industries, educational institutions, libraries, etc. The favourable reviews of the papers of Bulletins Nos. 1 and 2 appearing in technical journals has led to an increasing demand for the separate papers by engineers and researchers pursuing similar lines of investigation or desirous of obtaining new information regarding particular subjects. This has led the editorial committee to decide to issue all subsequent bulletins in sections, each section dealing with a single investigation or group of related investigations, the sections published during the year being then bound together so as to constitute the main bulletin.

The success of the School as measured by the actual results of researches, and the favourable reception which the papers embodying these results have received in many different quarters, has been very gratifying, and is indicative of the steady development of the School.

Another criterion of the effectiveness of this research movement within this Faculty is its growing influence upon the undergraduate body. This is shown by the increased interest of the students in the work of the School. This was, of course, to be expected, especially when the results of investigations carried out in our laboratories by the teachers themselves, are incorporated into the lectures and laboratory work of the undergraduate courses. The student is thus brought into direct contact with the method of development of his science. In view of this, it is not surprising that the number of students returning for post-graduate courses in research, and for advanced degrees in this Faculty, is increasing. This is one of the most hopeful signs, and points to the day when graduate work of research will constitute a much larger phase of the Faculty's activities.

It will be seen from the accompanying copy of Bulletin No. 2, that new and important contributions have been made to the following subjects:

Aeronautics, by Professor J. H. Parkin.

Sewage Disposal, by Professor P. Gillespie.

Current Transformers, by Professor H. W. Price.

The Determination of True Net Sections of Riveted Tension Members, by Professor C. R. Young.

The Proportioning of Concrete Mixtures, by Professor P. Gillespie.

These papers have been very favourably commented upon by engineers throughout the United States and Canada, as constituting valuable additions to our knowledge in these fields.

The following researches have also been in progress, some of which have been completed and will appear as sections of Bulletin No. 3, which is now in the press:

I. *Civil Engineering*:—

Professor Stewart:

An investigation of a modification of Talcott's method of determining latitude, with a view to fixing our latitude with the greatest precision, and to detect the effect of atmospheric conditions on such determinations, the variations of latitude, etc.

Professor Young:

(1) An investigation of the torsional strength of beams of plain and reinforced concrete. Two papers containing the results were published in the *Canadian Engineer*.

(2) An investigation of the effect of torsion on steel "I" sections.

(3) The determination of the economic form of concrete conduit sections.

Professor Gillespie:

(1) A study of economical designs for the external walls of covered reservoirs.

(2) A study of the kiln-drying of woods. This investigation is being carried out in co-operation with the Furniture Manufacturers' Association, and the experiments are conducted partly in the manufacturing plants and partly in the University laboratory. Gratifying results valuable to the industry have been obtained.

Professor Loudon:

Investigation of riveted sections by the photo-elastic method.

II. *Mining Engineering*:—

Professor Haultain:

The problem of the energy consumed in rock crushing is being investigated. The crushing rolls and integrating dynamometer required for this work have been constructed by the aid of funds from the Advisory Research Council of Ottawa.

Professor Haultain and Professor Dyer:

(1) The photographic analysis of ball paths in tube mills by means of the ordinary camera and the ultra-speed cinema camera has been continued.

(2) Quantitative work upon the problems of efficiency and capacity in ball milling is being continued.

Professor King:

(1) The research on the determination of graphite in graphite ores has been completed, resulting in improved apparatus and methods.

(2) The problem of cupellation losses as affected by draught is being investigated.

Professor Dyer:

An apparatus has been devised for the rapid determination of magnetite or pyrrhotite in ore.

III. *Mechanical Engineering*:—

Professor Angus:

(1) Experiments on the flow of steam through orifices.

(2) The rate of heat transfer from cast iron radiators.

(3) The construction of heater tables.

(4) An investigation of hydraulic turbines and draft tubes. Part of the apparatus for this investigation was kindly donated by the Dominion Engineering Works, Montreal, and the Wm. Cramp & Sons Co., Philadelphia.

Professor Allcut:

Experimental investigation of the possibility of replacing gasoline by producer gas made from coal as a source of motive power for commercial vehicles.

Professor Parkin:

(1) The wing tip research has been continued. Suggestions arising from the previous research have been developed and investigated. Three reports have been prepared.

(2) Extensive investigation has been conducted of thick tapered wings suitable for internally braced monoplanes. Three reports have been prepared.

(3) Investigation of the effect of grooving an aerofoil.

(4) Various methods have been developed for the simplification of computations in aerodynamic work. Two reports have been prepared.

(5) An investigation has been commenced with the object of developing improved high efficiency thick aerofoil sections for commercial aircraft. A report is in preparation.

(6) An exhaustive investigation with Mr. J. Patterson, of cup anemometers. Results have been communicated to the Royal Society of Canada and other scientific bodies.

IV. *Chemical Engineering*:—

Professor Ardagh:

An investigation of the cause of discolouration in corn oil soap, and an endeavour to prevent it.

Professor Bain:

(1) An endeavour to discover a cheaper method for the recovery of zirconium from its ores. A report will be published shortly.

(2) An investigation of the thermal effects observed in the reciprocal salt pair KCL—$NaNo_3$. The results will be published shortly.

(3) An investigation of the system K_2CO_3—Na_2CO_3.

Professor Boswell:

(1) The relative vapour pressure lowerings of some aqueous solutions were measured by an improved method. Published in *Canadian Chemistry and Metallurgy*.

(2) Experimental work upon the catalysis of the hydrogenation of unsaturated compounds by means of nickel led to the advancement of a new theory regarding the mechanism of such reactions. Published in the "Transactions of the Royal Society."

(3) Some new rubber reactions were discovered which led to the suggestion of a new constitution for rubber. Published in the "Transactions of the Royal Society."

(4) A general reaction was discovered by which it was found possible to prepare some dyestuffs of new constitution. This work is still in progress.

(5) An investigation of the mechanism of catalysis by platinum.

V. *Electrical Engineering*:—

Professor Price:

An investigation of automatic frequency controllers including auxiliary apparatus adapted for various sources of service.

VI. *Metallurgical Engineering*:—

Professor O. W. Ellis:

The influence of transition points, transformation ranges, and other factors upon the malleability of steel is being investigated.

Dental Research, under Direction of the Committee on Dental Research.

A report in the Department of Dental Research can only be a recital of the efforts of the late Prof. J. J. Mackenzie who had been on the staff of the Royal College of Dental Surgery for over twenty years and for a longer period Professor of Pathology in the University of Toronto. It is only after he has gone that the Department of Dental Research has learned of his extensive investigations and their value to the general public. He left enough work planned to engage the attention of the department for years. His viewpoint was large and his work thorough.

Dental Filling Materials as Barriers to Bacteria.

In recent years it has been shown that many systemic diseases have their origin from infections around the roots of teeth. It has been thought that such infections often go directly from the mouth through fillings to the root ends. This point has been settled by the researches of the department as well as many other related problems. The findings will direct the practice of dentistry along different lines in the matter of the selection of tooth and root filling materials. A report of the researches on this problem is now ready for publication and will stand as a monument to Professor Mackenzie's work in the interests of science and humanity.

The Influence of Diet on the Human Teeth.

Experimental feeding of animals and observations on the teeth of others have shown that diet has much to do with the quality of tooth structure. Just how great an influence has not yet been determined. This work is still in progress.

Tooth Root Infections and Streptococcus Viridans.

In collaboration with Dr. R. B. Gardiner, Miss J. C. Fraser has made hundreds of innoculations from diseased tooth root ends to determine what are the most frequent organisms present. It is remarkable that over ninety per cent.

of those found are of the streptococcus viridans type and these are variable in their toxicity. It is this form of organism which causes many deaths. Investigations are to be continued on the problem.

The funds to carry on dental research in the University are obtained from certain royalties on patents, designs, and copyrights in connection with mouth preparations and tooth brushes put on the market by the Canadian Oral Prophylactic Association.

The Association is a non-profit-sharing organization for the promotion of Dental Education of the profession and of the public. Its funds are given to the University to promote these objects. The University established a Department of Dental Research under the direction of a Committee appointed by the Board of Governors to give effect to the project.

(9) PUBLICATIONS.

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"The Ciscoes of Lake Erie". (*Canadian Fisherman*, Vol. IX).

"A case of Complete Hermaphroditism in a Bullfrog". (*Anatomical Record*, Vol. 22).

"Hydra in Lake Erie". (*Science*, Vol. LV, No. 1426).

"A Parthenogenetic Mayfly (Ameletus Cudens)". (*Canadian Entomologist*, Vol. LIV).

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Coventry, A. F.—"Breeding Habits of the Landlocked Sea Lamprey". (Petromyzon marinus, var. dorsatus, Wilder).
(Ontario Fisheries Research Series. *University of Toronto Studies*, 1922).

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"A Poplar Canker". (*Report of the Department of Lands and Forests,* Ontario, 1921).

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"The Bar of Sanio and Primordial Pit in the Gymnosperms". (*Proceedings of the Royal Society of Canada*).

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"The melting interval of certain undercooled liquids, with a note on the use of liquid air as a refrigerant". (*Journal Phys. Chem.* 26).

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"Methylene blue as indicator in determining the toxicity of phenol and phenol salt solutions towards yeast". (*Journal Phys. Chem.* 25, 1-9).

Fulmer, E. I.—"The effect of alcohol on the toxicity of phenol towards yeast". (*Journal Phys. Chem.* 25, 10-18).

"The acclimatization of yeast to ammonium fluoride, and its reversion in wort". (*Journal Phys. Chem.* 25, 455-472).

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"Heroes of our Home Lands". (Missionary Education Movement of Canada, May, 1922).

"The Highway of Adolescence". (*Teachers' Monthly*, Toronto).

"Those Adolescents". (*Church School*, Boston, 1921-1922).

Department of Physical Training.

Barton, J. W.—"A Business Man's Greatest Asset—Health". (*Business Methods*, Magazine, July, 1921).

(10) REPORT OF THE LIBRARIAN.

(*H. H. Langton, Esq., M.A.*)

I beg to submit the following report on the Library for the year ending June 30th, 1922.

The number of volumes added to the Library during the year is 9,440 and the number of pamphlets is 2,851, making a total of 177,858 bound volumes and 57,027 pamphlets in the Library.

The statistics of the use of the Library by students, with comparisons of the two previous years, are as follows:

	1919-20	1920-21	1921-22
Number of day books	41,128	41,483	41,928
Number of books taken out for the night	16,583	17,321	18,996
Number of books taken out for a week	4,589	4,687	4,792
Average number of students in Reading Room at any one time	77	75	75

The use of the Library, as the above figures show, is gradually increasing. During the past year on more than one occasion the number of students was in excess of the number of seats, and one of the two additional reading rooms in the basement was temporarily opened to accommodate them. It is desirable that one at least of these rooms should be constantly available, according to the plan

already prepared by the Librarian and approved of by the Library Committee. The object, however, being not only to provide more seating accommodation for readers, but to relieve congestion at the delivery desk, it will be necessary in order to achieve this end that additional assistants be provided for supervision of the third room, in which reference books and text books in certain subjects will be kept to relieve the pressure on the delivery desk upstairs. Until the funds of the University permit of the employment of the additional assistant or assistants, the present congestion at the desk, with its accompanying inconvenience to readers, must continue.

To complete the statement, however, of the use of the Library, it will be necessary to add that graduates of the University are allowed to borrow books on making a deposit roughly commensurate with the value of the books they borrow. This practice was begun in a small way some years ago. The number of graduates enjoying the use of the Library in this way has increased year by year until at present we have 426 graduates on our list who have made deposits and are constantly drawing books from the Library in their own names. During the year also a proposition was made by the Ontario Medical Association that members of the Association in good standing should be allowed to borrow books from the University Library on the guarantee of the Association. This proposal was accepted and an agreement made between the Association and the University to that effect.

The increased cost of books and periodicals in all countries since the war has fully kept pace with the increased appropriation for the purpose made by the Board of Governors, so that a further increase in the appropriation is urgently needed in order to meet the demands for more extensive purchases from most, if not all, of the departments of study. In addition, the opportunities now provided by economic conditions in Europe for filling up deficiencies in the Library has led members of the teaching staff to press for special purchases from second-hand dealers in European countries, which they rightly regard as chances not likely to occur again. Many advantageous purchases on these lines were made during the past year, and the Board of Governors has authorized the Librarian to spend in Europe a portion of the appropriation for the next year for the same purposes. The process of economic reconstruction in most of the European countries is forcing upon the market many private libraries and even some University collections. Many Librarians of American Universities have already visited the European countries in order to pick up for their Libraries valuable sets and standard works of reference at comparatively low prices, and it is expected that the forthcoming visit of the Librarian to Europe on the same errand will result in similar useful additions to the University Library. During his absence the management of the Library will devolve upon the Associate Librarian, Mr. W. Stewart Wallace.

(11) REPORT OF THE DIRECTOR OF THE SOCIAL SERVICE DEPARTMENT

(*Professor J. A. Dale.*)

The past session has been very encouraging. It was the second year of the full (two-year) diploma course, and satisfactory progress has been made in its consolidation. The one-year course was inevitably overloaded, because of the attempt to include the essential subjects. It is now possible to transfer many of

these to the second year, to the very great advantage of the students; and at the same time to make a more thorough and better balanced training. It is our confident hope that the experience of the students will convince them that the extra time spent in training is a very good investment; and that those who have to employ social workers will see its value also. It is one of the functions of the Department to influence public opinion in this direction, for the sake of the efficiency of social service. We hope that the course will be increasingly taken, in whole or in part, by men and women who will have it in their power to influence the policy of institutions, public or private, which are responsible for any phase of social work.

The registration of full-time students was fifty-five (forty-six first year, nine second year), of whom forty-three were successful (thirty-five first year and eight second), one first year student being conditioned in one subject. There were 100 part-time students. 155 nurses took the Medical Social course, of whom 143 were successful. The total registration was 310, and the number of certificates awarded 183.

It is a pleasure to record the cordial co-operation which we receive from the agencies upon whom we call for the practice work of our students. No fewer than thirty-five supervisors give careful attention to this work, placing at our disposal the resources of their agencies and of their own skill and experience—a co-operation valuable not only to the University and to the agencies, but to the progress of the social service of the community.

The special courses have been of great interest. One, dealing with the social aspects of Housing and Town-planning, formed part of the course arranged by Professor Berrington, of the Department of Architecture, and largely attended by architects and engineers in the Province. Another, dealing with the various aspects of Social Hygiene—moral and psychological, medical, legal, educational, recreational—was given at Hamilton for the Social Hygiene Council of that city, to crowded audiences. A course of six lectures, outlining the ideals and methods of modern philanthropy, was given as part of a course arranged by the Canadian School of Missions for missionaries on furlough. A series of three lectures, arranged with the same object, was given to the graduating class of Bishop Strachan School. The Director has delivered a large number of addresses in town, besides visiting Montreal (twice), Hamilton, Brantford, Campbellford, and Belleville. Public lectures this session were given by Professors Muirhead and Holborn, and Mr. Mansbridge.

A considerable part of the time of the permanent staff is spent on committee work for social agencies which have invited our co-operation. This we are glad to do, both for the sake of building up the field work, and to strengthen the place of the Department as an integral part of the social activities of the community. This year also the Department has taken the initiative in the foundation of a Canadian Association of Social Workers, which will probably be organized to serve also as an employment exchange. There is no question of the value of such an organization to the standards of social work, and it provides as well a much-needed medium whereby agencies can get into touch with available workers, and *vice versa*.

I have to draw attention to the fact that the Library Fund (a sum of $2,000 provided in 1918 by the McCormick Estate) is exhausted. This generous gift has enabled us to lay the foundation of a good working library. The books need

to be re-catalogued and the periodicals and pamphlets brought up to date; and unless a fresh donation is forthcoming, means will have to be found to enable us to buy new books, and keep up subscriptions.

We have been giving special attention to the training of men for work with boys. Seventeen registered this session, of whom nine completed their course and six were awarded certificates, eight having entered as part-time students specially for boys' work. There is evidence of a growing demand for trained leaders, and the students are anxious to take more practical work under supervision if it can be arranged: their practice consisted for the most part of the unaided conduct of clubs, in which they get experience, but no guidance. This need can only be met, as it has been for family and child welfare, by the appointment of a director who will be responsible for the assignments and give students the benefit of his oversight and instruction, and by building up a list of leaders in the city who are willing to have the students as apprentices. Arrangements are being made, but are not yet complete, to carry out this plan for next session as a temporary measure, by making a part-time appointment and starting a list of supervisors. During this experimental year there will a standing committee on training for boys' work. In developing the course, the general principles of the Department will be followed, and the training preserved from specialization in boys' work alone, still less in any one type. To quote the calendar: . . . "the course is planned in the belief that a thorough training for any kind of social work must be based on the study both of the whole social organization, and of individual and family problems. It is highly desirable that the student should gain a working knowledge of the leading forms of social service, in whatever form his future work may lie."

We have been glad to be able to give some lecture-room and reading-room accommodation again this year to the Department of Public Health Nursing. The close alliance of the two Departments was pleasantly exemplified in our joint closing exercises.

(12) REPORT OF THE DEPARTMENT OF PUBLIC HEALTH NURSING.

(Miss E. K. Russell, B.A.)

The second year of the Department's work has now been completed and has been marked by some encouraging features.

Attendance. Somewhat contrary to expectation a large class was again enrolled. In 1920-21 the Department had the unprecedented experience of registering fifty students in its first class, and during this second year the enrolment was forty-four, a slight reduction only, and that in spite of the fact that we raised the entrance standard so that many nurses who wished to enter were unable to qualify. This evidences a marked interest in this training course and a very real demand for it in Toronto. The latter fact is emphasized by the large number of Canadian women who have returned from American hospitals to take this special public health training in Canada. A further point of interest in connection with the enrolment is the number of students who came to us from the Provinces of Canada other than Ontario. It is recognized throughout the country that Toronto is carrying on an unusually good type of public health work, and the nurse who wishes to train for this field is glad to do so in the midst of such surroundings. The number enrolled in the Toronto course in one year has been

about equal to the total number in the four other Canadian colleges which offer a similar course. These large numbers may not be altogether a good thing at the beginning of such work, but they are facts which are significant and must be noted.

In May, forty of these students received the Diploma of the Department while two more were conditioned. In addition, there was throughout the year a registration of thirty-three occasional students attending certain lecture courses.

Entrance Standard. At present we are requiring that three years of high school work shall have been completed, and it is possible that in the near future that will be raised to matriculation. However, it is difficult to be altogether arbitrary about this for the student who enters this Department has had a three years' hospital training in addition to her high school work, as we accept none but graduate nurses. That means that this student is, speaking in the broader sense of the word, much better educated than the ordinary college freshman. There is room in this connection for an interesting study of the comparative merits of matriculation and intelligence tests.

Curriculum. According to our formula, the present training for a public health nurse occupies four years, three of which are spent in hospital and one in college. It is not too long, considering the responsible and difficult work for which she is preparing, but it cannot yet be said that these four years are being planned very wisely. If this present plan of training be continued, there should be a careful study of the work of the whole four years, and much change and re-arrangement in the interests of economy and efficiency in training.

Opportunities for our Graduates. Approximately forty-five per cent. of last year's class have found appointments in the city of Toronto, and forty-five per cent. elsewhere throughout Ontario. The remaining ten per cent. were, for various reasons, unemployable. A great many inquiries have come to us for workers, and it appears that the Provincial Departments of Health and Education are to be the chief employers of this specially trained public health nurse.

Scholarships. The Victorian Order of Nurses, which employs visiting bedside nurses all over Canada, has for a number of years been giving a special post-graduate training to nurses who enter its service. It has been found, however, that they are not equipped for educational work, and the Order is trying other plans for the preparation of its nurses. During the past year nine received scholarships from the Order to enable them to take the full course in our Department. We are not yet informed as to whether any such scholarships will be given during the coming year.

The Ontario Red Cross Society again gave ten scholarships, but it is probable that that number will be considerably reduced in the coming year, as the Society feels that the original purpose of these scholarships has been met.

Several other scholarships were donated by Toronto hospitals and nurses' alumnæ associations. We are deeply indebted to all these groups for their generous gifts, as that generosity has sent us a very fine group of students whom we should otherwise not have had.

(13) REPORT OF THE DIRECTOR OF UNIVERSITY EXTENSION AND PUBLICITY.

(W. J. Dunlop, Esq., B.A.)

In presenting my second annual report as Director of University Extension and Publicity, permit me to say that this work has expanded greatly during the year and that the people of Ontario are taking advantage in greater numbers of the special facilities for higher education which the University offers them through this department. During the year that has just closed, sixteen hundred and seventy-six students (adults, all of them) have received instruction in the various courses offered. This number is exclusive of the hundreds who have availed themselves of extension lectures throughout the Province and of the telescope service in the City.

University Publicity.

(a) Bulletins:—

The following have been issued and distributed during the year:—

(1) 5 000 copies of an eight-page bulletin on "University Extension."
(2) 5,000 copies of an eight-page bulletin on "Higher Education in Music."
(3) 5,000 copies of an eight-page bulletin on "The Need for Scholarships."
(4) 20,000 copies of a sixteen-page bulletin on "The Teachers' Course."
(5) 10,000 copies of an eight-page bulletin on "Opportunities for Graduates in Veterinary Science."
(6) 5,000 copies of a four-page bulletin on "The New University Entrance Requirements."
(7) 1,000 copies of the President's address on "Academic Freedom."
(8) 3,500 copies of an eight-page bulletin regarding the work offered in the summer session.
(9) 1,100 circulars regarding tutorial classes.
(10) 2,000 four-page folders on the short course for farmers and 5,000 announcements of the "two weeks' course."
(11) 10,000 four-page folders on the special course in work with boys.
(12) 1,000 circulars on the short course in Civics and Town-Planning.
(13) 1,500 circulars on the special courses in Household Science.
(14) 2,500 copies of a four-page bulletin on teachers' classes.
(15) 1,000 copies of a special circular on tutorial classes for Brantford and Brant County.

(b) Meetings: Addresses:—

The Teachers' Institutes in Hamilton and Brantford, the Normal Schools in Toronto, Hamilton, Ottawa, Peterborough, and Stratford, a meeting of junior farmers in Brampton, special meetings of teachers in Hamilton and Windsor, a gathering of workingmen in Hamilton, and the annual convention of the Canadian Weekly Newspapers' Association were addressed in the interests of University Extension work. Addresses on the new matriculation requirements were given before the University Women's Club of Toronto and at a meeting of the Municipal Council, the School Board, and representative citizens of Hespeler.

(c) News Items: Articles:—

(1) Mr. C. Lesslie Wilson, B.A., of the Wilson Publishing Company, has this year continued to print each week a new item regarding the University.

(2) University news has been supplied almost daily to the daily newspapers of Toronto.
(3) News items have been supplied weekly to the *Farmer's Sun*.
(4) Items of special news have been distributed to the leading dailies of Canada, Great Britain, and the United States.
(5) A good deal of publicity was given the meetings at the University of the American Association for the Advancement of Science.
(6) University articles and news items have been supplied to the *University Monthly* and numerous convention booklets and special publications.
(7) Material was furnished for a series of six bulletins issued by the Alumni Federation.
(8) Half-tone illustrations of University buildings have been loaned to various newspapers and periodicals.

(*d*) Advertising:—

Special lectures, conferences, courses, organ recitals, the Royal Ontario Museum, have been advertised in the daily press and other papers.

(*e*) General:—

The University's exhibit at the Canadian National Exhibition was visited by many thousands of people who evinced great interest in the several displays arranged by the Departments of Physics, Astronomy, Hygiene, Extension, and the Alumni Federation. The staff of the Extension Office was engaged almost continuously throughout each day and evening of the duration of the Exhibition in answering questions regarding the University and its work.

Groups of visitors were shown through the University Buildings quite frequently during the year.

University Extension.

(*a*) Summer Session:—

The attendance at the summer session in Arts was eighty-five, an increase of more than one hundred per cent. over 1920. First year French: second year History, French, Psychology and Science; third year History, Science and French; fourth year History and French were offered. It is of interest to note that the fees from summer session students in Arts now almost meet the expenditures for the salaries of the instructional staff; within two or three years the summer session will probably be self-sustaining financially.

The summer session for degrees in Pedagogy was attended by sixty-six students consisting chiefly of training school masters, secondary school teachers, inspectors, and others who are graduates of Canadian, British or American Universities. The post-graduate work offered in Pedagogy is proving very popular with Canadian educationists of all Provinces.

(*b*) Teachers' Classes:—

The enrolment increased from 76 to 118. Teachers' classes were also established in Hamilton where the enrolment was forty-one and where second year English was taught on Thursday evenings and second year Botany on Saturday forenoons. At the Central Y.M.C.A., Toronto, second year English, French and Psychology were taught in evening classes; the enrolment was twenty-six. In the summer session in Arts and in the teachers' classes, 270 teachers (and others) are studying for the B.A. degree while continuing their teaching or other

vocation. As an example of the popularity of this type of work it may be pointed out that several teachers gave up good positions in towns outside of Toronto and secured posts in the City at, in some cases, lower salaries, in order that they might take advantage of the teachers' classes.

(*c*) Correspondence Courses:—

Teachers so situated that they cannot take advantage of teachers' classes in Toronto or Hamilton are provided with correspondence work in preparation for the summer session. Of these there were forty-seven in the second year, five in the third year, and four in the fourth year. To them 631 correspondence bulletins were sent; 343 bulletins were received from them, corrected, and returned.

Sixty-two teachers took correspondence work in the upper-school course; twenty-three in the middle-school course; and ten in the commercial course. Bulletins sent them numbered 963, 421, and 196, respectively, and answer-bulletins totalled, 492, 228, and 39. A new correspondence course in Elementary Forestry was arranged with Dean Howe in May and many enquiries regarding it have already come in.

(*d*) Extension Lectures:—

This is the oldest form of University extension service and is still widely used. Eighty-three lectures were delivered by members of the University Staff in Alexandria, Bowmanville, Brighton, Barrie, Buffalo, Burford, Cobourg, Chatham, Collingwood, Drayton, Ennotville, Hamilton, Harrowsmith, Hillsburg, Huntsville, Jordan, Keswick, Lindsay, Locust Hill, Long Branch, Madoc, Meadowvale, Melbourne, Milton, Newmarket, Niagara Falls, Owen Sound, Perth, Peterborough, Picton, Port Colborne, Port Hope, Sault Ste. Marie, Scotland, Sudbury, Thistletown, Vineland Station, Walkerton, Watford, Welland, Wellington, Woodville and Woodstock.

(*e*) Workers' Educational Association:—

Seven classes for working men and women were conducted in Toronto with an enrolment of 115. The subjects were Economics, International Finance, English Literature and Rhetoric, British History, Psychology, Public Speaking and Trade Union Law. In Hamilton there were classes in Economics, English Literature, and Psychology, with an enrolment of fifty; in Ottawa three classes in Economics, English Literature and History, enrolment 210.

(*f*) Rural Tutorial Classes:—

Evening clases for rural and village people were conducted at Streetsville, Brampton, Cheltenham, Beeton, and Bond Head. The total enrolment was 134. In the first three of these English Literature was taught one evening each week during the academic session and in the other two Community Singing and English Literature were taken on alternate weeks. These classes are a boon to young people in rural and village communities and it is likely that more of them will be asked for next winter.

(*g*) Urban Tutorial Classes:—

In Toronto there were evening classes in English Literature, Zoology and two classes in Economics; there were afternoon classes for part of the session in Italian for Vocalists and Occupational Therapy. A class in English Literature was conducted in Brantford for ten weeks. Each class met one evening each week; the fees received cover the cost of tuition. The enrolment in these classes was 190.

(*h*) Short Course for Farmers:—

For the second time a two weeks' course was arranged in February for farmers, and the attendance this year was 225. The subjects of instruction were English Literature, Public Health, History, Psychology, Biology, Economics, Architecture, Household Science, Commercial Geography, Public Speaking and some general lectures on Engineering. This course has become an annual event.

(*i*) Short Course in Journalism:—

The first course of this kind was given from September 12th to 17th, 1922 at the request of the Canadian Weekly Newspapers' Association. The attendance was 123. The subjects of instruction were Editorial Writing, Newsgathering, English Literature, Canadian Constitutional History, Newspaper Jurisprudence and Public Health. The students were, for the most part, editors of weekly newspapers in Ontario and members of newspaper staffs, but there were also a good many "free lance" writers. This course promises to become an annual one and it is hoped that it will lead to the establishment of a Chair of Journalism in this University.

(*j*) Short Course in Civics and Town-Planning:—

This course was initiated by Professor Adrian Berrington of the Department of Architecture and was held from January 9th to 21st. The enrolment was forty-nine. Members of the staff and many prominent citizens, not members of the University staff, but experts in various phases of town-planning, delivered lectures. The course was in every respect a successful one.

(*k*) Short Courses in Household Science:—

Under Miss Laird's direction a short course in Household Science was given in the autumn term. So successful was this course that three distinct short courses were arranged for January, February and March. The enrolment in the four courses was 157.

(*l*) Telescope Service:—

In co-operation with the Department of Astronomy arrangements were made to set up two telescopes in front of Convocation Hall on a specified evening of each week during the spring and summer for the free use of the public. The attendance varied from twenty-five to 300. This service has resulted in interesting a good many persons in the study of astronomy.

(14) REPORT OF THE DIRECTOR OF DEPARTMENT OF MILITARY STUDIES.

(*Colonel W. R. Lang*).

As requested I have the honour to submit a Report on this Department for the session 1921-22.

1. The number of Honours and Pass Arts students enrolled in the three courses given was fifty-four. A special course for nine students of Applied Science was also held, making the total sixty-three.

In addition, 158 others took practical instruction in the C.O.T.C., many of them as an athletic option.

2. Five candidates successfully wrote on the November examination set by the War Office for certificates qualifying them as Lieutenants in H.M.'s Auxiliary Forces.

At the March examination twenty candidates passed the practical portion and wrote on the papers.

3. The Medical Faculty has placed Military Studies among the optional subjects in the final years of that curriculum, and the Militia Department has been asked to provide an examination for students who may take this. In this way it will be possible for those doing so to receive their qualification as Army Medical Officers at the same time as they graduate professionally.

A similar proposal has been laid before the Faculty of Applied Science, having in view the qualifying of students during their University course for commissions in the Corps of Canadian Engineers.

4. The department has been fortunate in securing the services of Brigadier-General G. S. Cartwright, C.B., C.M.G., retired list, Royal Engineers, as Special Lecturer, without expense to University funds. His lectures and the general assistance he has given have been much appreciated.

5. Several donations of books for the Department Library have been received and acknowledged. The use made of the reading room during the winter has quite justified its existence.

(15) REPORT OF THE UNIVERSITY HEALTH SERVICE.

(1) Men Students.

(Dr. George D. Porter, Director).

As Physical Training is now made compulsory, it is necessary that the student should first receive a physical examination which will properly classify him for this work, so that he may take the form and amount of exercise best suited for his needs.

Examination: For this purpose a staff of eight physicians chosen by the Professor of Medicine have examined the students of the first two years and the athletic teams. The Professor of Pathological Chemistry had the urinalysis (a very important part of the examinations) made for a large number by the medical students in his laboratory under his supervision, and he also did a large number of them himself.

A staff of eight specialists have also re-examined those referred to them for this purpose.

This year all the first two year men and the athletic teams were examined, making a total of 1,150, and 288 of those were later re-examined by the specialists.

Results: The results of these examinations are most gratifying as regards the general health standard of our students as it has been found that ninety-six and one-half per cent. of them are able to take Physical Training. We found that there were:—

Physically fit and able to take all gymnasium work.....	86½%
Men with some disability requiring supervised exercise	10 %
Physically unfit (some temporarily and a few permanently) and exempt from all gymnasium work	3½%

Next year we shall, I believe, have a still better record, for among the 1,200 already examined we find a number whose category has been raised during the year, some of whom have been definitely improved by following the advice given to them last year. Then some of those physically unfit last year were made so by war wounds or illness contracted overseas.

Venereal Diseases: It is pleasing to state that no case of syphilis has been found in our examinations of the first three years of the student body. As for the other venereal disease (gonorrhœa), while doubtless here and there cases have occurred, no evidence of this disease has appeared during our examinations, and when it is recalled that the examinations are compulsory, that everyone comes up stripped before us, and that these examinations are all completed in a period of four or five weeks' time, it is evident that we have a remarkable freedom from venereal diseases in our University.

It is our purpose to prepare a complete and detailed account of the physical findings among our students later on.

Athletics: We have examined all the athletic teams, track teams and athletes, and in a few cases have prevented students from taking part in athletics and games owing to weak hearts or other conditions making their participation harmful. We have also kept an occasional athlete with infectious throat, from the training table, and others with some infection from the swimming tank and gymnasium.

Advice: While assuming no responsibility for treatment of those who are ill, we give advice to a large number, and make it our duty to urge proper medical care where needed. A number of minor injuries, received in the gymnasium or on the campus, are attended to by Dr. Barton every day.

Lectures: Last year one lecture on personal health was given to the first and second year students in all the different faculties.

The co-operation of the men from the different faculties, the students and the Athletic Directorate in the initial work of the University Health Service has been most gratifying.

(II) Women Students.

(Dr. Edith Gordon, Medical Adviser).

In June, 1921, the Board of Governors of the University of Toronto made the appointment of a Medical Adviser of Women for the year 1921-1922. The duties attaching themselves to the position were those of making physical examinations of the women students, and of being available for consultations on problems of health and personal hygiene. These examinations and consultations were to be of a voluntary nature.

During the months of October, November and December, 1921, 532 voluntary physical examinations were made. The four colleges of the Faculty of Arts, the Faculty of Medicine, the Ontario College of Education, the Faculty of Music and the Departments of Social Service and Public Health Nursing were represented in this group.

As one would expect, the general condition of the students was excellent. The following table, grouped according to ability to engage in exercise, gives a clear idea of the physical fitness of the group.

Students physically able to take Physical Training.....	85.9%
Students requiring supervised training or corrective exercises..	9. %
Students unable to take Physical Training (temporarily or permanently)	5.1%

The outstanding fact brought to light by the physical examinations was the number of preventable and correctable defects found. These were the result of improper personal hygiene, inadequate or unsuitable exercise, and ignorance of the laws of physiology and sanitation.

The following table groups them:

I. Preventable and correctable defects (poor nutrition, underweight, overweight, weak feet, functional spinal curvature, constipation, etc.)	712	67. %
These could be corrected by suitable exercises and proper personal hygiene.		
II. Defects that could be corrected by treatment, operation, etc. (diseased tonsils, eye defects, diseased teeth, etc.)....	280	26.3%
III. Uncorrectable defects, but ones that could be prevented from becoming more pronounced, or developing into acute conditions (organic heart lesions, organic spinal curvatures, chest conditions, etc.)	72	6.7%

The work of the Medical Adviser naturally falls into two phases; Health Protection and Health Promotion.

Under the first heading comes the physical examination of the women students, with the classification into different groups according to the physical fitness for the various exercises, or the individual need of the student. Exercise of some kind is prescribed for practically all women students. At present it is for the student to decide whether she will follow this advice or not. Those students who are able to take Physical Training, but who have had little or none previously, are recommended to the elementary gymnasium class. Those who have had and have benefited by previous physical training are recommended to take the advanced work in the gymnasium or enter one of the groups training for special games or sports. The students with correctable defects or needing special supervision are recommended to the remedial class, where individual instruction in corrective exercises is given by the Physical Director, and re-examinations are made from time to time by the Medical Adviser, and progress noted. Those students who are physically unfit to take Physical Training are under the special supervision of the Medical Adviser, and as soon as they are able to undertake them, suitable exercises are prescribed.

The close connection between the work of the Medical Adviser and that of the Director of Physical Training is thus seen. Since 1913 there has been Physical Training for women in the University of Toronto under a full-time instructor, and with a well-planned programme of progressive Physical Training work. Two years of training have been given, and further work in two succeeding years planned for. An outline of the course is as follows:—

Part. I. requires forty periods of practice in the gymnasium and includes calisthenics, apparatus work, corrective exercises, games, swimming, etc. One lecture a week which includes physiology, anatomy, and first aid is also a part of this course.

Part II. requires eighty periods in the gymnasium, and includes advanced calisthenics, remedial and corrective work, indoor athletic games, swimming, life saving, etc. Twenty lectures on theory of exercises are given with this course.

Examinations are held at the end of each year. Fifty per cent. is the passing grade. Students must have satisfactorily completed the work of Part I and passed the examinations before they are eligible for Part II.

This work has been voluntary on the part of the students, and has met with varying enthusiasm. The fact that no recognition of this work is given by the University in the way of a diploma or certificate makes it discouraging for the student who has faithfully attended classes and passed creditable examinations. That this work is considered excellent is shown by the fact that students who have taken this course at the University of Toronto have received credit for it in recognized schools of Physical Education, upon the written recommendation of the instructor.

Under this voluntary system, it is frequently the healthy woman who is interested, and not the one who most needs the development obtainable through such a course that one finds enrolled. The college years are the last growing years of the student's life, and these years are the last in which any appreciable results can be obtained in the correction of developmental defects, and for the prevention of future diseases.

Under a compulsory system of physical education each student would receive the physical training most suited to her needs.

Another phase of the health protection of the women students is that of the supervision of the health conditions in the women's residences. In order to understand under what conditions the women are living, a survey of the five houses that accommodate the women of University College and the women of the Faculty of Medicine was made. With the exception of the addition to number 7 Queen's Park, these residences are all old houses that have been adapted for the purpose, and are not suited for it. The number of students accommodated in these five houses is 168. The number of women in University College and the Faculty of Medicine is nearly 700. Many of those unable to secure rooms in the residences are living in very undesirable rooms, and getting their meals in nearby tea-rooms or boarding houses. Others live at long distances from the University in order to find more comfortable quarters.

Old houses with large rooms that necessitate the placing of two or three students in one room with a single window and no provision for cross ventilation are very poor substitutes for the well-built dormitory, with its single rooms, large windows, and adequate ventilation. These, however, are to be preferred to the rooming house with inadequate heating, double beds, lack of hot water, and no care in time of illness. In the residences, at least, there is excellent supervision of the student, care in cases of illness, properly planned meals, and congenial companions.

Cases of illness are reported to the Medical Adviser, and in cases of communicable disease, investigations are made to discover the source, and measures are taken to prevent the spread of the disease.

An outstanding need for the women students is an infirmary where those sufferring from slight indispositions can be cared for for a few days. For those students living in rooming houses, this would be a boon, since at present their only choice, when ill, lies between no care at all or hospital care. One room in the Women's Union is available for such purposes, but the accommodation is inadequate. Another room at number 9 Queen's Park is set aside for an isolation ward.

The work of the Medical Adviser in health promotion begins with the physical examination where defects in personal hygiene are noted, and suggestions for correcting them offered. A consultation at a later date is proposed, and during that, the health problems of the student can be discussed more fully, and a living schedule outlined. When serious defects are discovered, or conditions requiring medical or surgical attention, the student is told so and advised to have a regular practitioner give her treatment. No treatment is given by the Medical Adviser. Where the condition discovered is due to poor personal hygiene, that is explained to the student, and her co-operation sought in improving the hygiene, and correcting the defect; but where medical or surgical treatment seems advisable, the student is urged to have it at once.

Another important part of the work of health promotion is in educating the students in the principles underlying health through lectures on hygiene. This year no lectures have been given to the women students, but it is hoped that in the future this important part of health education will not be neglected.

In looking back over the first year of the work of the Medical Adviser of Women, one is greatly encouraged. Under a voluntary programme, the continued interest and co-operation of the students shows real concern on the part of the women in their individual health problems, and an earnest desire to be and keep healthy. Several outstanding examples of marked improvement in physical efficiency make one feel that the experiment was worth while even if only these women were benefited.

(16) REPORT OF THE WARDEN OF HART HOUSE.

(J. B. Bickersteth Esq., M.A.)

I took over the administration of Hart House on the fifteenth of September, 1921, and received much valuable assistance from Mr. W. F. Bowles in the difficult task of attempting to master the details of a large and complicated organization.

Owing to the deficit on the first two years of operation, it was clear that the most rigid economy was necessary. At the same time it was essential that the ideals for which the House stands in the life of the University must not in any way be sacrificed. A desire to develop the House in every way, more especially on those sides where it ministers to the finer side of the undergraduate's life, together with the determination to practise economy wherever possible, has been the policy of myself and of all the committees associated with the management of the House throughout the past year.

It was my first duty to appoint a secretary-treasurer in succession to Mr. H. P. Bell, and it was felt that a thoroughly competent accountant should be obtained. Early in October Mr. W. H. Graham was appointed to this post.

MEMBERSHIP. The membership of Hart House this year has been approximately as follows: Graduate Resident 338. Graduate Non-Resident 70, Faculty, 202, Special 3, Honorary Life 13 and Undergraduate 3,800.

ADMINISTRATION. Hart House has taken an increasingly important part in the life of the University during the past year. Its rooms have been thronged day by day with hundreds of undergraduates. With very few exceptions the treatment of the House has been admirable and in many ways it is clear that the men are coming to realize what a unique institution they possess.

Throughout the year I have had valuable assistance from all the committees connected with the administration of the House. There are now ten committees associated with various departments of the House. They are: The Board of Stewards and Finance, House, Hall, Library, Music, Billiard, Sketch, Camera and Squash Committees. In every case the attendance at these committees has been good and the work done by the various undergraduate secretaries is worthy of special mention. During the year the Sketch Club, Camera Club and Squash Club have, all three, become committees of Hart House on the same footing as the other committees.

The undergraduate members of these committees are elected by the whole student body. The elections were held in Hart House early in March and the manner in which they were conducted was very satisfactory. Presidents of "years" throughout the University gave valuable assistance to the House Committee in this connection.

HOUSE COMMITTEE. Much work has fallen to the House Committee throughout the year and meetings have been held regularly every two weeks. Many questions of administration came up for consideration concerning employees of the House, equipment, repairs, guest rooms and the use of the House by numerous University clubs, societies, etc. The Committee recommended to the Stewards the extension of the hospitality of the House to many outside organizations of which the following are the chief: The American Association for the Advancement of Science, the Farmers' Extension Course, the Ontario College of Education Easter Convention, the Amateur Athletic Association of Canada and the Canadian Society of Forest Engineers.

During the meeting of the American Association for the Advancement of Science, immediately after Christmas, the House Committee managed the evening reception in Hart House, at which about two thousand guests were present. On this occasion all the activities of the House were in full swing—music, theatre, gymnasia, swimming pool, sketch room, billiard room, racquets and supper in the Great Hall.

Early in November this Committee was entirely responsible for the successful management of the Hart House Masquerade, now the premier social function of the University. About one thousand five hundred people were present at this dance (double tickets were sold at $1.50 and a profit of nearly two hundred dollars was made). The other dances held in Hart House during the year were: The Veterans, the Rugby, University College, Applied Science and the combined Junior Medical and the Hockey.

Visitors. On one Sunday of every month members have been allowed to introduce visitors and many hundreds of people both men and women have availed themselves of this opportunity to see Hart House.

Hall Committee. The Hall Committee has also done valuable work. At the beginning of the year they agreed to the recommendation of the Finance Committee and the Board of Stewards that meals should be served in the Great Hall at the following rates: breakfast twenty cents, luncheon thirty-five cents, and dinner thirty-five cents. Financial statements were put before this Committee from time to time and they were always ready to take any step to improve the finances of the Hall. A large deficit for the year 1920-21 was very greatly reduced. The greatest number of meals served in the Great Hall in one day was 1,600. The greatest number of meals served in the House in one day was 2,500. During the period September 26th to May 20th about 273,000 meals were served in the Great Hall, Faculty Union Dining Room, the Graduates' Dining Room and at special functions, the latter accounting for over 25,000.

Much credit is due Mr. V. C. Kerrison, the Superintendent of the Great Hall, and to his staff for their unfailing efforts to make the Great Hall a success.

Shop. The Hall Committee has also had the administration of the shop where tobacco and light refreshments are served. During the year this shop was moved and enlarged and has shown good profits each month.

Library Committee. There are few more successful features of the House than the Library. Throughout the year it has been full at all hours of the day. The Library Committee has rendered great assistance in its administration. The books have been reclassified and catalogued. The Committee was faced with the problem that books were disappearing from the shelves at a rate which it was considered might make a complete change of policy in the Library necessary. Only a limited number of new books, were, therefore, added during the year. Various steps were taken to prevent books from being taken out of the room. Notices were posted, articles were written in the "Varsity," and a Curator of the Library (an undergraduate) was appointed at a reasonable salary per month. The Library Committee further took over the administration of the reading room and saw to the ordering of the periodicals.

Music Committee. The development of interest in good music during the past winter has been very remarkable. Recitals have been held regularly throughout the year at five o'clock in the music room. The Music Committee, guided by a most active and efficient secretary, has been successful in enlisting the services of some of the leading musicians in Toronto. These recitals have been always well attended; often the room has been packed. Among those who have visited Hart House entirely as friends and given recitals are:—Mr. Welsman, Mr. Vincent Fink, Mr. Paul Wells, the Canadian Academy String Quartette, the Quintille Trio, Mr. Campbell McInnes, Mr. Viggo Kihl and many others.

A new upright piano was bought and placed in the Music Room, the grand piano, already there, being reserved for recitals.

Billiard Committee. The department, presided over by the Billiard Committee, has had a most successful year. A large revenue has accrued to the House from the billiard room. The behaviour of those using the room has

much improved. A new English billiard table was purchased and within a short space of time had paid for itself. An open handicap was held and a new silver cup purchased.

Sketch Committee. No organization in Hart House has greater possibilities than the Sketch Club. It should offer innumerable opportunities for linking up the undergraduates with the artists in Toronto. During the winter there has been some development, but much remains to be done to make this club a real influence in the University.

Membership has been increased and the attendance at the weekly meetings was fair. These meetings generally took the form of a class in life drawing from a model, under the direction of an artist from the city. There were several small exhibitions and a number of lectures.

The Picture Committee (a sub-committee of the Sketch Club) arranged for the loan of some sixty pictures to Hart House by the artists of Toronto. These pictures were hung in all the principal rooms of the House and were a great acquisition, being on the walls for about four months. This year, for the first time, a beginning has been made with regard to the regular buying of pictures for the House. The Picture Committee selected a picture of A. Y. Jackson from the proceeds of the Masquerade Ball and the graduating year of 1922 most generously presented a picture to Hart House, one of Mr. H. S. Palmer's being chosen.

Careful plans for the development of the activities of the Sketch Club have been worked out for the ensuing year, the chief features of which are a closer co-operation with the College of Art, the Theatre of Hart House and the Camera Club.

Camera Committee. The work of the Camera Club has been curtailed by the unavoidable delay in procuring adequate equipment for the dark rooms. Work, however, was begun late in the year. The membership was increased and plans drawn up for the development of this work in the coming year.

Squash Committee. The squash racquet courts have been more used this year than ever before. An average of twenty-five random days show that sixty men played per day. The ventilation of the courts was greatly improved by the installation of electric fans.

Religious Activities. There has been the closest co-operation between those responsible for the religious activities of the House and myself.

The Faculty Union. Efforts have been made during the year to draw up a written agreement between Hart House and the Faculty Union. Considerable progress was made in this respect and the relations between the two bodies have been entirely amicable.

Visitors. Whenever it has been possible, prominent visitors to Toronto have been invited to give a short address to the undergraduates at midday. The visitor lunches at the high table with the Warden and the undergraduates, and then speaks for twenty minutes in the lecture room (from 1.30 to 1.50 p.m.). p.m.).

Social Activities. As Warden of Hart House it has been my aim from the very first to set up a close personal relationship between myself and as many undergraduates as possible. This was the point I stressed in the short

address which I had the opportunity of giving in Convocation Hall on the occasion of the President's speech at the opening of the academic year. With this end in view I have entertained four hundred men in my rooms during the eight months, and I can frankly say that there is no part of my work which I have enjoyed more. These men have been entertained in groups of eight or ten at a time and it has been my object to invite men of different faculties, years and interests to meet each other in this way. The undergraduates of this University are second to none.

I have also entertained as my private guests a considerable number of people from outside the University.

During the month of March a letter was sent to every member of the Provincial Legislature inviting them to lunch at the high table in the Great Hall as the guests of the Warden and the undergraduate committees of the House. Between thirty and forty members came in small groups on different days. After lunch they were shown round the House and expressed themselves as very much interested in all that they saw.

Athletic Association. My relationship with the Athletic Directorate has been of the happiest. The Secretary of the Athletic Association, the Physical Director and others on the athletic staff have been always ready to do all in their power to ensure the efficient management of the House as a whole.

The Theatre. There has been the closest co-operation between Hart House and the Board of Syndics of the Theatre. There have been many ways in which the Director of the Theatre (Mr. Bertram Forsyth) and I have been able to give each other mutual assistance. My position as an ex-officio member of the Board has been of the very greatest interest to me.

General. My indebtedness to all Committees connected with the House and especially the Board of Stewards and the Finance Committee cannot be adequately expressed. Their attitude has been invariably sympathetic and their advice sound.

Early in March I visited the Universities of Harvard, Yale and Columbia. At Harvard I attended a conference of University and College Unions. Toronto and McGill were the only two Canadian Universities represented at the conference, all the remainder being American. The delegates were so impressed with Hart House that they made a most earnest request that the next conference should be held there. It is therefore planned to welcome the representatives of at least thirty American University Unions in Hart House next November. I was asked to become President of the Association for the current year.

During the spring the C.P.R. filmed Hart House. The film is to be shown in Canada, Great Britain and the United States and should do much to make known the unique character of the place. Indeed it is clear that Hart House is already becoming widely known. On many occasions during the year I have been asked to supply information with regard to its plans, organization and functions.

In conclusion let it be said that the year's work has served to show with ever greater certainty that the possibilities of Hart House are limitless. At present its history goes back three short years—traditions now being formed

will influence the future of the House for generations to come. To be responsible for the guidance of its manifold activities at such a formative period brings its full share of anxiety but can hardly fail to be inspiring.

(17) REPORT OF THE DIRECTOR OF THE CONNAUGHT ANTITOXIN LABORATORIES.

(Dr. J. G. Fitzgerald).

This report is a resumé of the activities in these laboratories, and in it is summarized the work of the eighth year since its establishment. In a general way there have been three main fields of endeavour. As was pointed out in the report for the previous year, a sum of money ($15,000.00) was set aside for the purpose of defraying the cost of a health demonstration among men students in the University for a two-year period. The object of the demonstration was two-fold:—

1. To ascertain the physical condition of the students of the first and second years in the Faculties of Arts, Medicine, Applied Science and Engineering and Forestry.

2. To recommend to those students who were in need of it, the advisability of their receiving medical care and health supervision.

The possibilities in the field of health promotion were brought to the attention of the students in lectures on Personal Hygiene given by Dr. Porter, who during the year was appointed Director of University Health Service and Lecturer in Hygiene. It is hopefully anticipated that an independent Department of University Health Service may be created as a result of this demonstration, which is being financed by the Connaught Antitoxin Laboratories.

The physical examinations and re-examinations when necessary of the men students have been conducted by members of the staff of the Department of Medicine of the University. The co-operation of the head of the department, Professor Duncan Graham, has been of most material assistance and is greatly appreciated.

Research Division: During the year the first volume of Studies from the Research Division, Connaught Antitoxin Laboratories, was published. In this are included seventeen papers embodying work undertaken by members of the Department. Seven of the papers were published therein for the first time, the others are re-printed and have already been published elsewhere. One additional contribution has since been made by Mr. Moloney and Miss Hanna, bringing the total number of communications up to eighteen. The following papers were published for the first time in this volume:—

"Contribution to the Study of Diphtheria Toxin", P. J. Moloney and L. O. Hanna.

"A Quick Acting Hydrogen Electrode." P. J. Moloney.

"The Public Health Laboratory and the Diagnosis of Smallpox." R. D. Defries and L. O. Hanna.

"Studies on Antiseptics in the 'Ripening' of Vaccine Virus with observations on the Influence of Temperature on the Longevity of the Virus in the Presence of Such Antiseptics." R. D. Defries and L. O. Hanna.

"Streptococci in Chronic Respiratory Infections." W. R. Hodge and C. Cohen.

"A Comparison of the Interpretation of the Findings in Chronic Pulmonary Lesions by Clinical Stereoroentgenographic Examination." A. H. W. Caulfeild and G. E. Richards.

"Agglutination Phenomena with Diphtheria Antitoxin." P. J. Moloney and L. O. Hanna.

There have been no changes in the personnel of this Division during the year, with the exception of the transfer of Dr. Hodge to the Department of Medicine.

ANTITOXIN: Dr. R. D. Defries, Associate Director of the Laboratories, has continued to have the immediate direction of the work of the Division during the year. The public health biological products distributed included:—diphtheria antitoxin, vaccine virus, tetanus antitoxin, anti-meningitis serum, anti-pneumococcus serum, Type I., anti-rabies vaccine, anti-typhoid and paratyphoid vaccine and normal horse serum. All of the public health biological products distributed free in Ontario by the Provincial Board of Health, and in Saskatchewan by the Bureau of Public Health, have been supplied by these Laboratories. In addition, antitoxin and vaccine have been distributed in all of the other seven Canadian Provinces. Biological products have also been sent during the year to New Zealand, China, Newfoundland, Barbados and Trinidad.

The annual inspection of the Laboratories and University Farm was made during the year by an officer of the United States Public Health Service, as required in the license granted to these Laboratories by the Treasury Department of the United States permitting the distribution of public health biological products in interstate commerce in the United States. The total distribution of products, while slightly lower than that of the previous year, has been very large.

During the past winter an addition has been made to the Main Building, University Farm, which has provided stabling for nine additional horses. Other alterations and improvements have also been effected, and the work of beautifying the property has also been proceeded with.

Finally, it has been possible during the present year for the Connaught Antitoxin Laboratories to assist in a co-operative manner in the very important researches on pancreas extract being conducted by Dr. F. C. Banting, Mr. C. H. Best and Dr. J. B. Collip with the assistance and advice of Professor J. J. R. Macleod. A laboratory for the production of the extract in considerable quantity was fitted up, and a sum of $5,000.00 set aside by these Laboratories to make possible the production of the extract for use in the Toronto General Hospital and Hospital for Sick Children, during a period in which the precise value of the extract is being determined.

The Departments of Physiology, Pharmacology, Medicine, and the Connaught Antitoxin Laboratories all joined in this co-operative effort. The production of the extract is still being carried on in the special laboratory established for this purpose.

(18) STATEMENT REGARDING THE BIOLOGICAL MUSEUM

(Professor B. A. Bensley.)

The following donations have been received for the Biological Museum and the Royal Ontario Museum of Zoology:—

A mounted cormorant and other birds from Mr. George Lyndner, Toronto.
A number of bird skins from Mr. Harold Walker, Toronto.
A great horned owl from Mrs. E. Cobourg, Toronto.
A collection of forty-two mounted birds from Mr. T. D. Wilson, Toronto.
A snow goose and other birds from Mr. G. H. Corsan, Toronto.
A chameleon from Mr. A. R. Clarke, Toronto.
A tarpon from Mr. E. J. Melhuish, Toronto.
A case of natural history specimens from Mrs. Knox, Toronto.
An albino Virginia deer from Mr. J. J. Walsh, Toronto.
A flying squirrel from Mr. Frank Dymond, Kerwood, Ont.
A large number of specimens from the Parks Department, City of Toronto, including Japanese deer, fallow deer, lioness, peccary, bison and tiger.

The collections have been greatly increased by addition of material resulting from the fisheries research expedition of 1921 to Lake Nipigon.

Several purchases of specimens have been made at nominal valuations, including a collection of some 1,400 birds and mammals from Mr. W. R. Campbell, Lobo, Ont.

(19) STATEMENT REGARDING THE MUSEUM OF GEOLOGY.

(Professor A. P. Coleman.)

One new wall case has been installed in this gallery, but no addition to the collections has been made other than the usual acquisitions as listed below. The grant for the purchase of material has been used, in part under a special arrangement with Dr. W. F. Ferrier and in part for purchase in Europe. The results can not yet be stated.

The chief acquisitions during the year are:

By Donation:

Fossil wood from Yellowstone Park.—Mr. Alfred E. Bailey, Toronto.
Sphalerite from Chitwood, Arizona and Joplin and Webb City, Mo.—Professor Bayley, per Dr. T. L. Walker.
Two prepared samples of Ohio freestone.—Cleveland Stone Co., Cleveland, Ohio.
Three prepared samples Indiana limestone.—Indiana Quarries Co., Bedford, Ind.
Oil shale from Colorado and Utah.—Mr. F. V. Clisdale, Toronto.
Lead ore from Galetta, Ont.—Kingdom Mining Co., per Mr. L. H. Cole, Ottawa.
Asbestos from Thedford, Que.—Consolidated Asbestos Co., Montreal.
Electrum from Comstock lode.—Consolidated Virginia Co.
Glaciated surface, Lockport dolomite.—Quinlan & Robertson, Toronto.
Copper ores and country rock.—Eustis Mining Co., Eustis Mines, Que.
Prepared sample Lockport dolomite, Beamsville.—Hon. Wm. Gibson.
Large collection of polished marble slabs from Europe.—Mr. H. R. Ivor, Toronto.
Fire clay, volcanic ash, diatomaceous earth, quartz sand, bentonite.—Mr. Joseph Keele, Ottawa.

Osmiridium from Tasmania; Nickel and Cobalt ores from New Caledonia.

Laterites from Cuba.—Dr. W. G. Miller, Toronto.

Case of finished manufactured products of nickel.—Mond Nickel Co., England.

Barite from Columbia Valley.—Dr. A. W. G. Wilson, Ottawa.

(20) STATEMENT REGARDING THE PALÆONTOLOGICAL MUSEUM.

(*Professor W. A. Parks.*)

During the year one of the dinosaur skeletons obtained by the expedition of 1920 has been mounted in the gallery. This is a very valuable specimen, representing a new genus and species.

PARASAUROLOPHUS WALKERI. Two other heads, apparently of another new genus, have been partially prepared. The grant for the purpose of material has been reserved for expenditure in Europe.

The more important acquisitions during the year are:

BY DONATION:

Devonian corals from Haldimand county.—Mrs. A. E. Aiken, Toronto.

Lockport dolomite with bird bones from Milton.—Dr. D. E. Robertson.

Mammoth tooth from Toronto.—Mr. W. F. Deer, Toronto.

Richmond fossils from Ohio.—Dr. A. F. Foerste, Dayton, Ohio.

Miocene leaves, Queen Charlotte Islands.—Capt. Smith, Queen Charlotte.

Cretaceous invertebrates, Queen Charlotte Islands.—Capt. Smith, Queen Charlotte.

Bryozoa from Lockport formation at Hamilton.—Mr. J. Wallace, Hamilton, Ont.

Large collection Carboniferous fossils from Nova Scotia.—Geol. Survey, Canada.

BY COLLECTION:

Local fossils.—Professor Parks and students.

Fossils from Meaford.—Professor Parks, Professor MacLean, Mr. W. S. Dyer.

Several skeletons of dinosaurs, and fossil plants from Alberta.—Museum Expedition, W. A. Parks, Levi Sternberg.

(21) STATEMENT REGARDING THE MINERALOGICAL MUSEUM

(*Professor T. L. Walker.*)

In the Royal Ontario Museum of Mineralogy, which is under the direction of Professor T. L. Walker, are very extensive collections of minerals and rocks. The most generous benefactors of this section are men connected with the mining industry. To make the collections more useful to visitors, the large specimens contained in the high cases are provided with special explanatory labels. In the cases on the east wall of the gallery a special display of the minerals of Canada is arranged. The Director appeals to friends of the University for contributions of minerals and rocks with a view of making these collections as complete as possible.

During the past year the collections have been increased by donations from a large number of friends, particularly mine owners and mining engineers in the Cobalt, Sudbury, Porcupine and Kirkland Lake areas. Notable presentations have been made by the Geological Survey of Canada; the Department of Mines of Ontario; the Geological Survey of Brazil; the De Beers Consolidated Mines, Limited; the Hollinger Gold Mines; William J. Woods, Lewiston, Pennsylvania; Dr. Leo Coleman; Radium Information Service Company; A. M. Bateman and Professor H. E. T. Haultain.

Important exchanges have been made with the Geological Survey of the Union of South Africa and the Institute Geologico Nacional, Mexico.

(22) STATEMENT REGARDING THE MUSEUM OF ARCHÆOLOGY.

(*Professor C. T. Currelly.*)

The rapid growth of the Royal Ontario Museum of Archæology has continued throughout the present year. Some hundreds of important gifts have been received. The importance of many of the pieces will make them, for all time to come, great national treasures that will have a marked effect upon the development of the country along all lines in which any artistic judgment is shown.

The phenomenal development of the George Crofts Collection of Chinese art still continues. In addition to the steady growth of our European collections, we obtained over four hundred pieces of Casas Grandes decorated pottery.

Dr. Harcum of the Museum staff and Dr. David M. Robinson of Johns Hopkins University have continued their work of getting ready the second volume of our publication of the classical vases.

The teaching work in the Museum has increased, and numerous large meetings have taken place. We are glad to see that the use of the Museum is growing rapidly.

A new venture in the form of a loan exhibit to the Public Library at Walkerville has been undertaken. Six cases of objects connected with art and archæology were placed on loan in their library. It is expected that this idea of loan exhibits will soon be developed in other places.

The routine work of the Museum has proceeded as usual. The list of donations to the Museum is too long to be printed.

APPENDIX B.

(1) Enrolment in the Colleges.
(2) Enrolment in University subjects.
(3) Registration in Courses in the Faculty of Arts.
(4) Registration for Graduate Courses.

(1) Enrolment in the Colleges

The students in University College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Orientals	Ethics
First Year—								
Pass	6	360	95	350	66	275	148	.....
Honours	17	9	8	75	18	65	.....	9
Second Year—								
Pass	12	37	.....	210	15	160	95	.....
Honours	7	9	3	45	10	49	4	6
Third Year—								
Pass	7	12	5	135	11	105	80	40
Honours	5	12	6	28	4	28	4	10
Fourth Year—								
Pass	3	4	7	100	10	58	45	35
Honours	11	11	8	50	3	16	1	10
Totals—								
Pass	28	413	107	795	102	598	368	75
Honours	40	41	25	198	35	158	9	35

The students in Victoria College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Orientals	Ethics
First Year—								
Pass	7	118	42	104	22	103	24	.....
Honours	5	8	25	49	13	40	.....	1
Second Year—								
Pass	4	16	.....	96	5	69	12	.....
Honours	2	3	13	23	14	22	1	6
Third Year—								
Pass	3	9	1	86	9	43	1	15
Honours	5	2	1	17	3	20	4	9
Fourth Year—								
Pass	.....	1	1	47	4	13	2	5
Honours	.....	.....	.....	7	2	5	.....	5
Totals—								
Pass	14	144	44	333	40	228	39	19
Honours	12	13	39	96	32	87	5	21

The students in Trinity College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Orientals	Ethics
First Year—								
Pass	3	35	.....	35	8	32	3	.....
Honours	1	5	7	11	5	12	.....	.....
Second Year—								
Pass	4	13	.....	25	1	18	1	.....
Honours	2	2	.....	2	.....	1	.....	.....
Third Year—								
Pass	2	2	3	22	.....	12	2	8
Honours	2	2	2	4	2	2	.....	
Fourth Year—								
Pass	1	1	.....	10	1	6	.....	5
Honours	2	.....	.....	4	2	2	.....	.....
Totals—								
Pass	10	51	3	92	10	68	6	13
Honours	7	9	9	21	9	17	.....	.....

The students in St. Michael's College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Philosophy	Ethics
First Year—								
Pass	4	77	3	79	3	76	.....	.....
Honours	.....	.....	6	15	4	16	.....	5
Second Year—								
Pass	.....	26	.....	32	2	28	12	.....
Honours	3	4	1	12	3	9	3	3
Third Year—								
Pass	.....	5	.....	26	2	22	5	23
Honours	2	3	2	3	.....	5	3	5
Fourth Year—								
Pass	.....	5	.....	25	4	18	4	17
Honours	1	1	1	3	1	3	7	7
Totals—								
Pass	4	113	3	162	11	144	21	50
Honours	6	8	10	33	8	33	16	20

(2) Enrolment in University Subjects.

The following tables exhibit the numbers attending lectures in University subjects, together with the number of those taking the practical work in the laboratories:—

DEPARTMENT OF MATHEMATICS

	Pass	Pass and Honours	Honours
Faculty of Arts—			
First Year	628	.....	71
Second Year	39	.....	112
Third Year	12	.....	35
Fourth Year	1	.....	9
Faculty of Medicine—			
First Year	13	.....	.....
Second Year	4	.....	.....
Third Year	5	.....	.....
Faculty of Applied Science—			
First Year	.....	171	.....
Second Year	.....	186	.....
Total	702	357	227

DEPARTMENT OF PHYSICS

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	441	.....	65	65
Second Year	15	.....	57	67
Third Year	6	.....	22	28
Fourth Year	4	.....	18	9
Graduate Students	.....	.....	16	16
Faculty of Medicine—				
First Year	.....	147	.....	147
Second Year	.....	53	.....	53
Third Year	.....	18	.....	18
Faculty of Forestry—				
First Year	21	.....	.....	21
Faculty of Household Science—				
First Year	20	.....	.....	20
Ontario Veterinary College Students	12	.....	.....	12
Total	519	218	178	456

DEPARTMENT OF BIOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	426		83	83
Second Year	20		40	60
Third Year	17		28	45
Fourth Year	11		3	14
Teachers' Class	24			24
Graduate Students				7
Faculty of Medicine—				
First Year		147		147
Second Year		167		167
Faculty of Applied Science—				
First Year				
Second Year				
Fourth Year			8	8
Faculty of Forestry—				
First Year			21	21
Fourth Year			14	14
Totals	498	314	197	590

DEPARTMENT OF BOTANY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	429		70	70
Second Year	108		24	132
Third Year	20		7	27
Fourth Year	4		3	7
Graduate Students			13	13
Faculty of Applied Science		37		37
Faculty of Forestry—				
First Year		19		19
Fourth Year		13		
Ontario Veterinary College—				
First Year		11		11
Second Year		22		22
Total	561	102	117	338

DEPARTMENT OF CHEMISTRY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	378	.....	82	82
Second Year	81	.....	63	100
Third Year	14	.....	24	26
Fourth Year	5	.....	10	8
Graduate Students	.....	.....	23	17
Faculty of Medicine—				
First Year	.....	141	.....	141
Second Year	.....	165	.....	165
Faculty of Applied Science—				
First Year	.....	.....	.....	34
Second Year	.....	42	.....	42
Third Year	.....	166	.....	166
Fourth Year	.....	7	.....	7
Faculty of Forestry—				
First Year	16	.....	.....	16
Second Year	18	.....	.....	.....
Ontario Veterinary College Students	12	.....	.....	12
Total	524	521	202	816

DEPARTMENT OF PHYSIOLOGY

	Pass	Honours	Laboratory
Faculty of Arts—			
Third Year	.....	21	21
Fourth Year	.....	15	15
Graduate Students	.....	5	5
Faculty of Medicine—			
Third Year (six)	130	.....	130
Third Year (five)	211	.....	211
Ontario Veterinary College Students	41	.....	41
Total	382	41	423

DEPARTMENT OF BIOCHEMISTRY

	Pass and Honours	Honours	Laboratory
Faculty of Arts—			
Third Year	.....	56	.....
Fourth Year	.....	17	17
Graduate Students	.....	12	9
Faculty of Medicine—			
Third Year	136	.....	136
Graduate Students	.....	6	.....
Occasional Students	.....	2	2
Ontario Veterinary College Students	24	.....	24
Total	160	93	208

DEPARTMENT OF GEOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	411	.....	44	.....
Second Year	1	.....	15	15
Third Year	13	.....	7	16
Fourth Year	11	.....	5	14
Graduate Students	.....	.....	3	3
Occasional Students	.....	.....	2	2
Faculty of Applied Science—				
First Year	.....	.....	.....	.....
Second Year	.....	15	.....	3
Third Year	.....	71	.....	21
Fourth Year	.....	46	.....	14
Faculty of Forestry—				
Second Year	.....	20	.....	.....
Third Year	.....	10	.....	10
Total	436	192	76	98

DEPARTMENT OF MINERALOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
Second Year	12		17	29
Third Year	1		25	9
Fourth Year			7	7
Graduate Students			1	1
Faculty of Applied Science—				
First Year		50		50
Second Year		48		48
Third Year		22		22
Fourth Year		14		14
Graduate Students		1		
Faculty of Forestry—				
First Year		1		1
Second Year		14		14
Third Year		3		3
Total	13	153	50	199

DEPARTMENT OF PHILOSOPHY

	History of Philosophy and Metaphysics		Logic		Ethics	
	Pass	Hon-ours	Pass	Hon-ours	Pass	Hon-ours
First Year						9
Second Year		20		20		12
Third Year	24	22	94	22	47	13
Fourth Year	30	4		4	17	1
Graduate Students	20					
Total	20	54	46	94	46	64	35

DEPARTMENT OF POLITICAL SCIENCE

	Pass	Honours
Faculty of Arts—		
Department of Political Science—		
First Year	.....	16
Second Year	126	32
Third Year	109	43
Fourth Year	64	41
Graduate Students	.....	14
Department of Commerce and Finance—		
First Year	.....	29
Second Year	.....	21
Third Year	.....	9
Fourth Year	.....	7
Department of Modern History—		
First Year	.....	1
Second Year	.....	3
Third Year	.....	2
Fourth Year	.....	8
Department of Philosophy—		
Third Year	11	.....
Department of Household Science—		
Fourth Year	10	.....
Department of Social Service—		
First Year	44	.....
Department of English and History—		
Second Year	24	.....
Faculty of Applied Science—		
Second Year	193	.....
Faculty of Medicine—		
Second Year	76	.....
Faculty of Forestry—		
Third Year	15	.....
Department of Commerce—(New Commerce Course)—		
First Year	.....	25
Second Year		11
Department of Public Health Nursing—	46	
Occasional Students	.....	6
Totals	718	268

DEPARTMENT OF HISTORY

	Pass	Honours
First Year	33	75
Second Year	121	65
Third Year	91	91
Fourth Year	57	68
Total	302	289

DEPARTMENT OF ITALIAN AND SPANISH

	Italian		Spanish	
	Pass	Honours	Pass	Honours
First Year	25	4	127	84
Second Year	4	3	38	45
Third Year	4	2	27	25
Fourth Year	2	.....	10	8
Graduate Students	.....	2	.....	3
Total	35	11	202	165

DEPARTMENT OF HOUSEHOLD SCIENCE

	Pass Course	Household Science Course	Total
Faculty of Arts—			
First Year	.....	20	20
Second Year	.....	14	14
Third Year	8	19	27
Fourth Year	8	17	25
Graduate Students	.....	.....	3
Faculty of Medicine—			
Third Year	.....	.....	42
Department of Public Health Nursing	.....	.....	44
Extension Courses	.....	.....	128
Total	16	70	303

(3) Registration in Courses in the Faculty of Arts, 1921-1922.

Courses	First Year				Second Year				Third Year				Fourth Year				Total
	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	
Pass	334	108	32	83	131	45	21	30	94	49	18	24	59	21	6	21	1,076
Classics	4	4	1	.....	.....	2	2	1	2	2	2	2	7	.....	.....	1	29
Greek and Hebrew	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	2
Orientals	.....	.....	.....	.....	2	.....	.....	.....	2	4	.....	.....	.....	.....	.....	.....	8
Orientals (Greek Option)	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	2
French, Greek and Latin	.....	.....	1	.....	1	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	5
Moderns	46	12	3	10	31	16	1	4	27	14	1	5	17	5	2	3	197
English and History	6	9	4	3	15	5	.....	5	8	9	2	1	13	3	2	1	86
Modern History	2	6	1	.....	2	.....	.....	1	2	1	.....	.....	4	4	.....	.....	23
Political Science	13	3	3	.....	18	10	1	.....	30	8	4	.....	26	13	3	.....	132
Commerce and Finance	26	9	.....	.....	12	7	1	.....	8	1	.....	.....	7	.....	.....	.....	71
Philosophy	1	.....	.....	2	4	7	.....	3	2	3	.....	5	.....	2	2	7	38
Philosopy, English and History	4	1	2	2	4	3	.....	.....	13	5	1	.....	.....	.....	.....	.....	35
Mathematics and Physics	12	6	1	.....	12	8	.....	.....	7	5	.....	.....	6	4	1	.....	62
Natural and Physical Sciences	25	17	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43
Physics	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Biology	.....	.....	.....	.....	1	2	1	.....	3	.....	.....	.....	3	.....	.....	.....	10
Physiology and Biochemistry	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Physiological and Biochemical Sciences	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	3	.....	.....	14
Biological and Medical Sciences	.....	.....	.....	.....	9	6	1	.....	12	6	2	1	1	1	.....	.....	39
Chemistry and Mineralogy I	.....	.....	.....	.....	5	3	.....	.....	1	1	.....	.....	.....	.....	.....	.....	10
Chemistry and Mineralogy II	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	2	2	.....	.....	7
Chemistry	.....	.....	.....	.....	4	1	.....	.....	12	2	1	1	3	1	2	.....	27
Geology and Mineralogy	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Household Science	1	1	.....	.....	2	.....	.....	.....	2	1	.....	.....	.....	1	.....	.....	8
Household Economics	11	7	.....	.....	3	8	1	.....	8	8	.....	.....	7	9	.....	.....	62
Science for Teachers	.....	.....	.....	.....	.....	.....	.....	1	1	3	.....	.....	1	1	.....	.....	7
Commerce	19	4	.....	.....	8	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	33
Totals	505	187	48	101	267	125	31	46	239	123	31	39	168	70	18	33	2,030

(4) Registration for Graduate Courses.

Faculty of Arts:

		M.A.	Ph.D.	Graduate
Department of	Anatomy	1	2	.....
"	Astronomy	2	....	.....
"	Bacteriology	1	2	.....
"	Biochemistry	5	....	1
"	Biology	1	3	.....
"	Botany	3	10	.....
"	Chemistry	12	10	.....
"	Classics	9	....	.....
"	Educational Theory	7	....	.....
"	English	8	....	7
"	Food Chemistry	6	....	.....
"	Geology and Palæontology	1	2	.....
"	German	2	.....	.....
"	History	9	1	2
"	Household Science	2	....	1
"	Hygiene	.....	3	.....
"	Mathematics	3	1	1
"	Mineralogy	1	....	.....
"	Oriental Languages	.....	1	.....
"	Pathological Chemistry	.....	1	.....
"	Philosophy	12	3	5
"	Physics	10	7	.....
"	Physiology	3	1	.....
"	Political Science	10	3	.....
"	Romance Languages	4	4	3
"	Zymology	2	2	.....
	Miscellaneous	.....	1	.....
		114	57	20

Faculty of Medicine:

	M. D.
	7

	Men	Women	Total
Candidates for Ph.D.	47	10	57
Candidates for M.A.	77	37	114
Candidates for M.D.	7	.....	7
Graduate Students	10	10	20
Total	141	57	198

APPENDIX C,

Results of Examinations.

(1) Faculty of Arts.
(2) Faculty of Medicine.
(3) Faculty of Applied Science and Engineering.
(4) Faculty of Forestry.
(5) Ontario College of Education.
(6) Faculty of Music.

(1) Faculty of Arts.

First Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass	....	286	103	33	91	513	198	160	155	....	10	....	80
Supplementals	....	60	19	9	11	99	50	45	4	....	1	....	....
Classics	....	4	4	1	....	9	9	....	....	....	....	....	....
French, Greek and Latin	....	....	....	1	....	1	....	1	....	....	....	1	1
Moderns	....	44	12	3	10	69	63	6	....	16	2	....	4
English and History	....	7	9	2	3	21	17	4	....	1	....	....	....
Modern History	....	2	5	1	....	8	8	....	....	1	....	....	....
Political Science	....	12	3	3	....	18	14	4	....	5	....	....	....
Phil., English and History	....	3	1	2	2	8	6	2	....	....	....	....	2
Commerce and Finance	....	25	7	....	....	32	23	9	....	8	....	....	1
Philosophy	....	1	....	....	2	3	1	2	....	1	....	....	....
Mathematics and Physics	....	11	6	1	....	18	15	3	....	5	....	1	1
Natural and Physical Science	....	23	16	....	1	40	35	4	1	....	1	1	1
Household Economics	....	15	5	....	....	20	19	1	....	....	1	....	....
Commerce	....	19	4	....	....	23	10	13	....	4	....	....	6
Occasional	....	15	1	....	2	18	9	....	9	....	....	....	....
Teachers	33	....	....	....	....	33	8	15	10	....	....	....	....
Total	33	527	195	56	122	933	485	269	179	41	15	3	96

Second Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass	....	131	49	23	28	231	110	80	41	....	....	....	36
Supplementals	....	22	8	6	3	39	33	6	....	....	....	....	....
Classics	....	....	2	3	1	6	6	....	....	....	....	....	....
Orientals	....	2	1	....	....	3	2	1	....	....	....	....	....
French, Greek and Latin	....	1	1	....	....	2	2	....	....	....	....	....	1
Moderns	....	31	15	1	4	51	44	7	....	4	2	....	2
English and History	....	14	5	....	5	24	21	1	2	1	4	....	1
Modern History	....	2	....	....	1	3	3	....	....	1	....	....	....
Political Science	....	16	10	1	....	27	21	6	....	4	2	....	1
Commerce and Finance	....	11	6	1	....	18	10	7	1	5	2	1	1
Philosophy	....	4	6	....	3	13	11	2	....	....	....	1	1
Phil., English and History	....	4	4	....	....	8	6	1	1	1	....	....	....
Mathematics and Physics	....	12	7	....	....	19	15	3	1	1	....	1	1
Physics	....	1	....	....	....	1	1	....	....	....	....	....	....
Biology	....	1	2	1	....	4	3	1	....	1	....	....	....
Physiology and Biochemistry	....	1	....	....	....	1	1	....	....	....	....	....	....
Biological and Medical Science	....	8	7	1	....	16	15	1	....	....	1	....	1
Chemistry and Mineralogy	....	5	2	....	....	7	5	2	....	....	....	1	1
Chemistry	....	4	2	....	....	6	3	2	1	2	....	....	....
Geology and Mineralogy	....	1	....	....	....	1	1	....	....	....	1	....	....
Household Science	....	2	....	....	....	2	2	....	....	....	....	....	....
Household Economics	....	4	7	1	....	12	8	4	....	....	....	2	2
Science for Teachers	....	....	....	....	1	1	1	....	....	....	....	....	....
Commerce	....	9	1	....	1	11	3	7	1	....	....	....	....
Occasional	5	7	1	....	7	20	9	6	5	....	....	....	....
Teachers	94	....	....	....	....	94	64	20	10	....	....	....	....
Totals	99	293	136	38	54	620	400	157	63	20	12	6	48

Third Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass	....	97	45	22	24	188	144	33	11	....	5	....	....
Supplementals	....	8	6	2	1	17	12	5	....	....	1	....	....
Classics	....	2	1	2	2	7	7	....	....	....	....	....	....
Orientals	....	2	4	....	....	6	5	....	1	....	....	....	....
Orientals (Greek Option)	....	1	....	....	....	1	1	....	....	....	....	....	....
Greek and Hebrew	....	27	12	1	5	45	42	2	1	....	2	....	....
Moderns	....	1	....	....	....	1	1	....	....	....	....	....	....
French, Greek and Latin	....	....	1	....	....	1	1	....	....	....	....	....	....
English and History	....	8	9	2	1	20	20	....	....	....	....	....	....
Modern History	....	1	1	....	....	2	1	1	....	....	....	....	....
Political Science	....	29	8	4	....	41	37	4	....	....	1	....	....
Commerce and Finance	....	8	1	....	....	9	8	1	....	....	....	....	....
Philosophy	....	2	4	1	5	12	11	1	....	1	1	....	....
Philosophy, English and History	....	10	5	....	....	15	14	1	....	....	....	....	....
Mathematics and Physics	....	6	5	....	....	11	11	....	....	....	....	2	2
Physics	....	1	....	....	....	1	1	....	....	....	....	....	....
Biology	....	3	....	....	....	3	2	1	....	....	....	....	....
Biological and Medical Science	....	12	6	2	1	21	19	2	....	....	1	....	....
Chemistry and Mineralogy I.	....	1	1	....	....	2	2	....	....	....	....	....	....
Chemistry and Mineralogy II.	....	3	....	....	....	3	2	1	....	....	....	....	....
Chemistry	....	12	2	1	1	16	11	3	2	....	....	1	1
Household Science	....	2	1	....	....	3	2	1	....	....	....	....	....
Household Economics	....	8	7	....	....	15	10	5	....	1	....	....	....
Science for Teachers	....	1	3	....	....	4	4	....	....	....	....	....	....
Occasionals	1	7	2	....	2	12	9	3	....	....	....	....	....
Teachers'	28	....	....	....	....	28	25	2	1	....	....	....	....
Totals	29	252	124	37	42	484	402	66	16	2	11	3	3

Fourth Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals.	Passed	Granted standing on Active Service.	Starred	Failed	Aegrotat	Debarred	Pass Degree
Pass	....	68	28	6	21	125	100	14	10	1	2	..	..
Classics	....	7	....	....	1	8	8	....	....	....	....	....	..
Orientals	....	1	....	....	....	1	....	1	....	....	....	....	..
Orientals (Greek)	....	2	....	....	....	2	1	1	....	....	....	....	..
Greek and Hebrew	....	1	....	....	....	1	....	1	....	....	....	....	..
Moderns	....	18	6	2	3	29	28	1	....	....	....	....	..
English and History	....	13	4	3	1	21	17	3	1	....	2	....	..
Philosophy, English and History	....	4	2	....	....	6	....	6	....	....	....	....	..
Modern History	....	4	4	....	....	8	8	....	....	....	....	....	..
Political Science	....	33	17	3	....	53	40	12	1	....	1	..	..
Commerce and Finance	....	11	....	....	....	11	7	4	....	....	....	....	..
Philosophy	....	1	2	2	7	12	10	1	1	....	....	....	..
Mathematics and Physics I	....	5	3	1	....	9	8	1	....	....	....	....	..
Mathematics and Physics II	....	3	1	....	....	4	4	....	....	....	....	....	..
Biology I	....	1	....	....	....	1	1	....	....	....	....	....	..
Biology II	....	1	....	....	....	1	1	....	....	....	....	....	..
Biology III	....	1	....	....	....	1	1	....	....	....	....	....	..
Physiology and Biochemistry	....	12	3	....	....	15	15	....	....	....	....	....	2
Biological and Medical Science	....	1	1	....	....	3	1	1	....	1	....	....	..
Chemistry and Mineralogy I	....	2	1	....	....	3	1	2	....	....	....	....	..
Chemistry and Mineralogy II	....	3	1	....	....	4	2	1	1	....	....	....	..
Chemistry	....	9	2	2	....	13	6	7	....	....	....	....	..
Household Science	....	....	1	....	....	1	1	....	....	....	....	....	..
Household Economics	....	7	8	....	....	15	15	....	....	....	....	....	..
Science for Teachers	....	2	3	....	....	5	2	2	1	....	....	....	..
Teachers	18	....	....	....	....	18	17	....	1	....	....	....	..
Totals	18	210	88	20	34	370	249	58	16	2	5		2

(2) Faculty of Medicine

	Passed	Starred	Failed
First Year (Six Years' Course)	73	35	21
Second Year	129	33	4
Third Year (Six Years' Course)	101	17	11
Third Year (Five Years' Course)	147	46	10
Fourth Year (Five Years' Course)	156	50	8
Fifth Year (Five Years' Course)	130	19	5
Totals	736	200	59

(3) Faculty of Applied Science and Engineering

	Passed with Honours	Passed	Starred	Failed
First Year:				
Civil Engineering	4	15	5	5
Mining Engineering	1	4	3	2
Mechanical Engineering	4	22	9	5
Architecture	1	8	3	.....
Chemical Engineering	5	24	8	5
Electrical Engineering	15	39	20	6
Metallurgical Engineering	1	3	1	2
Second Year:				
Civil Engineering	2	27	18	4
Mining Engineering	2	6	3	2
Mechanical Engineering	4	28	11	5
Architecture	1	6	5	2
Chemical Engineering	4	32	20	7
Electrical Engineering	9	40	17	6
Metallurgical Engineering	.....	2	.....	1
Third Year:				
Civil Engineering	5	37	24	7
Mining Engineering	4	17	9	.....
Mechanical Engineering	6	50	24	7
Architecture	2	10	1	.....
Chemical Engineering	3	51	15	.....
Electrical Engineering	8	55	26	15
Metallurgical Engineering	1	7	4	.....
Fourth Year:				
Civil Engineering	8	24	11	.....
Mining Engineering	3	11	.....	.....
Mechanical Engineering	3	24	4	.....
Architecture	.....	3	.....	.....
Chemical Engineering	20	16	.....	1
Electrical Engineering	5	31	.....	2
Metallurgical Engineering	1	2	.....	.....

(4) Faculty of Forestry

	Passed	Honours Deferred	Failed
First Year	7	5	6
Second Year	5	6	2
Third Year	4	5	2
Fourth Year	11	2	.....
Special Students	3	1	.....

(5) Ontario College of Education

	Passed	Failed
*High School Assistants' Course	132	.....
Specialists' Course	85	.....
First Class Public School Course	32	.....
Elementary Art Course	24	.....
Elementary Physical Culture Course	73	.....
One Year Household Science Course	13	.....
Bachelor of Pedagogy Course	2	.....
Bachelor of Pedagogy Course (passed in part)	5	.....
Doctor of Pedagogy Course	3	.....
Doctor of Pedagogy Course (passed in part)	54	.....
Number who failed in whole or part	.....	27

*Many of these are included among those who passed or failed in the other courses in this list.

(6) Faculty of Music

	Passed	Starred	Failed
Bachelor of Music:			
First Year	9	2	4
Second Year	3	1	2
Third Year	3	1	.....
	15	4	6

APPENDIX D.

Geographical Distribution of Students

The geographical distribution of students is as follows:—

FACULTY OF ARTS

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Total
Ontario: (1) Province	110	564	316	99	122	1,211
(2) Toronto	137	613	160	23	104	1,037
Nova Scotia	4	3	1	.....	.....	8
New Brunswick	.....	4	2	1	.....	7
Prince Edward Island	.....	2	.....	1	.....	3
Quebec	3	3	3	.....	.....	9
Manitoba	13	3	3	2	.....	21
Saskatchewan	9	11	25	1	1	47
Alberta	5	9	4	1	.....	19
Yukon	.....	1	.....	.....	1	2
British Columbia	3	17	4	3	1	28
United States	23	7	5	4	3	42
Elsewhere	7	17	19	1	1	45
Duplicate registrations	.....	3	.....	.....	.....	25
Totals	314	1,251	542	136	233	2,454

SUMMARY

	Faculty of Arts	Graduate Studies	Faculty of Medicine	Faculty of Applied Science	College of Education	Faculty of Forestry	Faculty of Music	Department of Social Service	Department of Public Health Nursing	Totals
Ontario:										
(1) Province	1,211	76	598	442	204	25	8	139	22	2,725
(2) Toronto	1,037	90	368	324	110	25	28	133	42	2,157
Nova Scotia	8	5	7	5	3	1	.....	10	1	40
New Brunswick	7	2	.....	.....	2	1	.....	3	3	18
Prince Edward Island	3	1	.....	.....	1	.....	.....	2	.....	7
Quebec	9	2	6	4	1	1	.....	6	2	31
Manitoba	21	1	4	5	4	3	.....	2	.....	40
Saskatchewan	47	3	22	11	13	.....	3	2	.....	101
Alberta	19	1	12	9	9	1	.....	3	.....	54
British Columbia	28	3	40	7	3	2	1	4	2	90
Yukon	2	.....	.....	.....	.....	.....	.....	.....	.....	2
United States	42	9	6	3	1	1	4	1	3	70
Elsewhere	45	5	9	11	2	2	.....	5	2	81
Duplicates	25	.....	.....	.....	.....	.....	.....	.....	.....	67
Totals	2,454	198	1,072	821	353	62	44	310	77	5,349

The students from the Province of Ontario are distributed as follows:—

County	Faculty of Arts	Graduate Studies	Faculty of Medicine	Faculty of Applied Science	College of Education	Faculty of Forestry	Faculty of Music	Department Social Service	Department of Public Health Nursing	Totals
Algoma	12		8	7	2	1	1	3		34
Brant	35	3	21	16	3	1				79
Bruce	20		17	12	3	1	1	2	3	59
Carleton	66	6	15	13	13	3		6	2	124
Dufferin	11	1	13	2	1	1				29
Dundas	11	3	2	2	3				1	22
Durham	18	1	9	5	5			2		40
Elgin	18	1	15	13	2			2		51
Essex	33		14	11	6	1		1		66
Frontenac	2	2			8	1		3		16
Glengarry	4				1					5
Grenville	2		2	3	1			1		9
Grey	39		27	8	3	2		8	2	89
Haldimand	7		14	7	5					33
Haliburton	1									1
Halton	21	1	11	12	2		2	4	1	54
Hastings	20	2	18	4	7			8		59
Huron	36	5	27	16	13			5		102
Kenora	1		4							5
Kent	32		14	7	2					55
Lambton	27	1	25	9	2			3		70
Lanark	17	1	5	4	7	2		4		40
Leeds	19		8	1	4	1		5		38
Lennox and Addington	14	1	4	1	1			2	1	24
Lincoln	35	3	15	8	5			1		67
Manitoulin	1		3							4
Middlesex	29	6	12	23	16	1	1	7	2	97
Muskoka	8		2	9		1		2		22
Nipissing	5		5	7	2				1	20
Norfolk	13		7	6	1			1		28
Northumberland	29	1	8	5	5		1	2		50
Ontario	30	3	23	17	3			8		85
Oxford	35	4	9	10	2			5	2	67
Parry Sound	7		5	3		1		1		17
Peel	20		10	8	2			1	2	43
Perth	48	4	20	18	9			5		104
Peterborough	39	1	10	7	12			1		70
Prescott	1		3		4					8
Prince Edward	4		4	1	1			1		11
Rainy River	2									2
Renfrew	20		2	4	2			4		32
Russell	3			2	2					7
Simcoe	53	4	38	22	5			14	1	137
Stormont	10		1	2	5			1		19
Sudbury	5									5
Thunder Bay	10		2	5	1					18
Timiskaming	5			4				1		10
Victoria	20	1	11	11	5			4	1	53
Waterloo	33		13	26	3	1		2		78
Welland	33	1	23	12	1			2		72
Wellington	64	6	25	11	5	2		2	2	117
Wentworth	130	8	32	25	13			8		218
York	53	6	39	43	6	5	2	7	1	160
Toronto	1,037	90	368	324	110	25	28	133	42	2,157
Totals	2,248	166	966	766	314	50	36	272	64	4,882